shortened as the restoration of normal conditions became possible; but any experienced passenger who—when willingly or unwillingly deprived of Pullman accommodations—has had to put up with disagreeable conditions in a day coach, would no doubt be glad to see some such experiment tried.

Relation Between Purchasing and Stores Depts.

Henry B. Spencer, director of the Division of Purchases, United States Railroad Administration, presented a paper before the New York Railroad Club September 19, which was printed in the *Railway Age* of September 26, and which was largely in the nature of suggestions as to improvements in the purchasing and stores departments organizations, based upon observations of the practices of the roads under federal control. Mr. Spencer recommends that the purchasing, storing, handling, disbursing, etc., of all material and supplies be placed under the direction of an executive officer. That there is great need for better organization and methods on some roads is indicated by the comparative data as to the amount of stores carried by two unnamed roads, which are said to be typical of two extremes. Unfortunately, the discussion of the paper did not deal with the larger aspect of Mr. Spencer's recommendations. There is bound to be a wide difference of opinion over such a radical suggestion. Its success will, of course, depend upon getting a big enough man for the job and of having, at the same time, the very best methods for keeping an accurate record of the material and its movement. A perpetual or continuous inventory is essential in order that the exact condition may be ascertained promptly and at any time. Such records rightly used and accompanied by close co-operation between the purchasing and stores departments and those departments using material will bring results no matter what form of organization is followed. The question is to develop that form of organization which, under the peculiar conditions on a given road, will develop these ideal conditions.

Weak and Strong Coal Mines

The weak and strong road problem of the railroads is not unique; just at present an analogous problem is presented in the coal mining industry. Just as freight rates which will yield the Denver & Rio Grande or the Chicago Great Western a bare existence, will yield the Union Pacific or the Chicago, Burlington & Quincy a large profit, so the price per ton for coal which will little more than pay miners' wages in operations where the seams of coal are thin and difficult to work, will yield a very large profit—William G. McAdoo, former director general of railroads, speaks of 200 per cent—to other mines with broad, easily workable seams of coal. Just as in earlier discussions of the railroad problem there have been advocates of government ownership on the ground that the public and not private investors should profit by the earnings of the advantageously situated road, so there are now advocates of government ownership of the coal mines, in order that the public rather than the operators shall get the profit from rich, cheaply workable coal. One of the important factors in convincing the public of the undesirability of government ownership of railroads has been the quality of the service rendered during government operation. Service is not so important a factor in the coal situation, but another reason which applies to the operation and ownership of coal mines, as well as to the operation and ownership of railroads, namely, the higher cost of government business than of private business, has been demonstrated convincingly by government operation of the railroads. This country needs an increased, not a diminishing output of coal. Apparently the most practical as well as the cheapest way in the long run to get it, is to accept economic law, and permit owners and operators of cheaply workable coal mines to make the profit which their advantage over other coal mine operators gives them.

The Remarkable Revival of Railroad Freight Traffic

LAST SPRING the freight traffic of the railways of the United States declined to the smallest amount that it had since 1915. In October, 1919, the amount of freight traffic handled was the largest ever handled in any single month in the history of American railroads except August, 1918.

These statements show the remarkable way in which the industry and commerce of the country recovered after the slump which was caused by the cessation of the war in Europe. In February, 1919, the number of tons carried one mile by the railroads was only 25,700,000. This was the smallest month's business that had been handled since 1915. In October, 1919, the number of tons carried one mile was 40,300,000, an increase over February of 57 per cent. A comparison between February and October is unfair, however, because of the fact that October has a larger number of days than February. But March and October have the same number of days; and the business handled in October was 40 per cent greater than it was in March. October is always one of the busiest months of the year on the railroads and the traffic handled in October, 1919, was 1.3 per cent greater than that handled in October, 1918, which held the record for October up to this year.

The coal strike caused a sharp decline in the amount of business handled by the railroads in November. The rapid increase of freight business from February to October, however, and the fact that the business handled in October broke all records, show how large is the productive capacity of the country at the present time, and are very reliable indications of how large the production will be after the coal strike is over. Looking at the matter from a transportation standpoint, while the railroads have succeeded in handling 1.3 per cent more freight than in October, 1918, they did not handle quite as much freight as they did in August, 1918, and it taxed their facilities to the limit to handle what they did.

With the productive capacity of the country so great as it is shown to be by the immense volume of business it began to give the railways as soon as it had partially recovered from the effects of the war, and with the difficulty that the railroads experienced in handling that business, the fact is made increasingly clear that under any system of operation the railroads for some years to come are going to find it impossible to handle all the business the country can give them unless there is a sharp industrial depression.

While this fact is so plain, and while it makes so obvious the necessity for the immediate revival of the expansion of railroad facilities, the government at Washington continues to refrain from adopting any definite and constructive measures for the solution of the railroad problem. President Wilson has announced that he will return the railways to their owners on January 1, but Congress has passed no legislation to prepare for their return.

Some people continue to predict that the failure of the administration and Congress to deal constructively with the subject of railroad *regulation* will make successful private management of railroads unavoidable. If the administration and Congress should show no more capacity to deal with the

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railroad problems which would arise under public *ownership* than they show in dealing with those which arise under public *regulation,* it is obvious that government management would not be made any greater success than the government regulation has been and is being made.

The Dunkirk Collision

THE INTERSTATE COMMERCE COMMISSION issued on November 26 a report, dated September 2, and signed by W. P. Borland, chief of the Bureau of Safety, on the rear collision of passenger trains at Dunkirk, N. Y., July 1, when eight passengers were killed in a New York Central express train. The report says that the investigation was conducted in conjunction with the Public Service Commission of New York state, but that commission has published no report on it.*

The cause of this collision and the problem of preventing such disasters in the future, have been discussed by many writers. Different phases of the question have been touched upon in the *Railway Age.* In a letter printed July 18, page 92, S. G. Neal presented the claims of the "Automatic Straight Air" brake. In the issue of August 15, page 291, E. W. Pratt gave his experience with certain safeguards. In the issue of July 25 there was an editorial note. The question why no action was taken by any person on the train back of the engine is uppermost in many minds. C. W. Hoisington, of Wichita Falls, Tex., writes: "The engineman sounded the signal for brakes. How many trainmen realize and fully appreciate this signal? It is plain that many do not. Why? Simply because the trainmaster who employs them does not make them acquainted with its true importance. It may be admitted that the average brakeman could not have stopped that train in the distance available; but it would seem that two men, with the assistance of the conductor and the baggageman could have at least slackened the speed to such an extent as to have mitigated the consequences. How about the conductor's valve? How many trainmen are taught that on the first intimation of an impending collision or derailment they should pull the cord?"

Another correspondent asks, "Were the brakes applied, on the cars, either by hand or by pulling the conductor's valve? If they were applied did the application indicate full air pressure? If not applied, did the trainmen hear the whistle? If they did not hear it, why? Over how many cars can the New York Central standard whistle be heard by men in a train moving at high speed"?

It is pertinent to consider these questions. They suggest a great change which has taken place in railroad practice since the air brake became universal, but which we recognize only tacitly. By reason of the general and complete reliance on the air brake, hand brakes have not only fallen into disuse, so far as passenger trains are concerned, but, as an emergency safeguard, have become impossible. The task of keeping trainmen keyed up to the high state of vigilance which prevailed in the old days is practically out of the question. The rule books still keep up the fiction, but the practice has no respect for the rule books. Our correspondent asks if the trainmen of Train 7 heard the short blast of the whistle calling for the setting of the hand brakes; and if they did, why they did not respond. Mr. Borland's report settles it that the single blast was sounded, and was several times repeated; but it also gives the facts which explain the uselessness of the whistle signal in such an emergency. Ten witnesses testify to hearing the whistle stop-signal given by train No. 7, most of them saying that it was repeated three or more times; yet the conductor of the train (sitting in the seventh car) did not hear these repeated blasts; the baggageman did not hear them; the "second conductor," riding in the same car with the conductor, heard them, but took no action; and Brakeman Colmorgan heard them, but did nothing more than to "ask the conductors what they meant"! The second conductor "did not pay any attention" to what this brakeman said. The flagman of this train, when approaching Dunkirk, "heard more whistling than usual" and interpreted it as the engineman's warning to pedestrians to get off the track.

Discussion as to the amount of noise made by the train, or the size of the whistle on the locomotive, will not develop any profitable information. The conductor and the baggageman say that they did not hear the sounds; but it is a safe conclusion that if they had heard them no quicker action would have been taken. The hand brakes on heavy vestibuled cars are a slow and clumsy resource at best and nobody expects anything from them. The conductor's valve is the last (and only) resort. That does its duty if it is used; but the vital question is to get it used promptly. Our problem is that of the human agency; and the big problem, from that standpoint, is that of training common human beings to act as quickly in an emergency which may occur once in two or twenty years, as they would in an everyday procedure which has become second nature. The desideratum is to educate *all* of the employees on a train—including porters, waiters and cooks—to open the air valve as quickly, when they perceive that the train is in danger, as the engineman would open it if he saw danger. The most cursory comparison of the conditions in the cars with the conditions surrounding the engineman is sufficient to show the almost insuperable difficulty of doing this. Only the most regular and efficient attention to a thorough drill of all hands could accomplish even an approach to this theoretical safeguard.

It is true, as our correspondent suggests, that the ideal trainmaster, with unlimited resources at his command, might train a force of men up to a much higher degree of efficiency than is now to be found, even on the best roads. But, with conditions as they are, the practical operating officer must feel a strong sympathy toward the trainmaster who frankly admits that his trainmen depend wholly on the engineman to keep their train from running into danger. And our remedial measures must be directed to insuring to the engineman every possible means of doing this.

The statement of facts in this case, as given by the trainmen, has the earmarks of the kind of "testimony" so familiar at such hearings, where the directness of the questions and the positive and unequivocal nature of the replies (as recorded in the printed report) leave, as a final impression on the hearer's mind, the feeling that the real situation in the testifiers' minds is neither clear nor simple; that what they heard, or did, or thought, or said, in the crucial moment, was confused or indefinite, or could not be clearly described, and that what they said on the witness stand was correspondingly untrustworthy. Their conduct had fallen far short of their duties (duties as outlined by the questioner after his study of the rule book) and their narrative, two hours or two days afterward, thus was inevitably almost or quite worthless. Thus we have here, as in countless other cases, a puzzle for the investigator which he cannot solve. For an effective remedy he must direct his efforts in other directions.

*This collision was reported in the *Railway Age* of July 4, 1919, page 40. Westbound passenger train No. 41, second section, standing at the station, about 2 a. m., was run into at the rear by westbound passenger No. 7, moving at about 40 miles an hour; 12 persons were killed and 111 injured. A trespasser, riding between the tender and the leading car, is believed to have closed the angle cock in the air brake pipe, on the assumption that thereby he could stop the train. The present report summarizes the testimony of trainmen and other competent witnesses, 10 of whom heard a whistle signal given by the engineman of No. 7, calling for the application of hand brakes. Some of these witnesses said the whistle was sounded four times, some seven times and others an indefinite number. The report contains five photographic pictures of the wreck, but contains no conclusion except that the collision was caused by the closing of the angle cock.

Results of the Operation of the English Railroads

THE NET RESULT of the operation of the railroads of Great Britain by the government from August 5, 1914, to June 30, 1919, has been a deficit after the payment of the guaranteed rental to the private companies of £21,911,000 ($109,555,000). It is estimated, however, that in the fiscal year ending March 31 next, the deficit for that twelve months alone will be £45,000,000 ($225,000,000). It was not until 1918 that net operating revenues fell below the amount necessary to meet the government guarantee of rental. Since that time, however, a decline in gross revenues and a large increase in operating expenses have reduced the net operating income to but a fraction of the amount of the rental guarantees.

Under date of October 31, 1919, Sir Eric Geddes, minister of transportation, has issued a "white paper" giving the figures for revenue and expenses of railroads of Great Britain and Ireland during the period of governmental control. The total operating revenues for this period (five years lacking one month), was £749,065,000, ($3,745,325,000). The total net operating income was £220,810,000 ($1,104,050,000), and the total guaranteed rental was £222,721,000 ($1,113,605,000) leaving a net loss to the government of £21,911,000 ($109,555,000). The rental guaranteed by the government was based on the revenues and expenses of 1913. In 1913 the railroads of Great Britain earned £118,701,000 ($593,505,000) and operating expenses including taxes amounted to £75,127,000 ($375,635,000), leaving a net operating income of £43,574,000 ($217,870,000) available for interest and dividends. At the outbreak of the war earnings increased rapidly. The railroads under government operation made no charges for government service, but in all of the figures quoted above there is included an estimated amount as revenue from government service. Thus, in the period from August 5 to December 31, 1914, £3,500,000 ($17,500,00) is credited as revenue from government traffic; in 1915, £10,279,000 ($51,395,000); in 1916, £20,649,000 ($103,245,000); in 1917, £35,699,000 ($178,495,000); in 1918, £41,917,000 ($209,585,000), and in the first half of 1918, £12,919,000 ($64,595,000).

In addition to performing railway service the government took over the operation of railroad hotels, steam boats, docks, etc. In each year since 1914 there has been a deficit from these operations amounting to £158,000 ($790,000) in 1915, but to £2,190,000 ($10,950,000) in 1918. Furthermore, the government has paid the interest on additional capital since the beginning of the war. This interest amounted to £543,000 ($2,715,000) in 1915, and had reached the rate of £1,000,000 ($5,000,000) a year by June 30, 1919.

Included in the government statement of railroad expenses for the period of government operation is an amount covering arrears of maintenance. Apparently the government has been fairly liberal in making its estimate of arrears, although to prove this we would have to have available more detail than is covered in the ministry of transportation "white paper."

Maintenance of way in the test year, 1913, cost £11,818,000 ($59,090,000). A somewhat similar proportionate amount was spent in the last five months of 1914, but a charge of £800,000 ($4,000,000) was made for arrears. In 1915, £11,598,000 ($57,990,000) was spent on maintenance of way, and £2,985,000 ($14,925,000) was charged for arrears. In 1916, £11,924,000 ($59,620,000) was spent and £5,056,000 ($25,280,000) was charged for arrears. In 1917, £13,266,000 ($66,330,000) was spent, and £6,282,000 ($31,410,000) charged for arrears. In 1918, £16,145,000 ($80,725,000) was spent, and £6,485,000 ($32,425,000) charged for arrears; and in the first six months of 1919 £10,224,000 ($51,120,000) was spent and £1,357,000 ($6,785,000) was charged for arrears.

It should be born in mind that the track structures, etc., of English railroads are on the average more nearly permanent structures than the average on American railroads. The evil effects of delayed maintenance are slower, therefore, in making themselves apparent. The final result, however, is similar to that which has resulted from deferred maintenance on American railroads. Assuming that the estimates of arrears is based on impartial opinion, the jump in maintenance expense from less than £12,000,000 ($60,000,000) in 1916 to more than £13,000,000 ($65,000,000) in 1917, and to more than £16,000.000 ($90,000,000) in 1918, with a steadily increasing, not decreasing, amount chargeable for arrears is significant. The increased cost of labor and materials would not probably account entirely for the course taken by cost in maintenance of way and charges for arrears.

Figures for maintenance of equipment show similar conditions. Maintenance of equipment in 1913 cost £13,258,000 ($66,290,000) In the five months of 1914 quite a little less than a proportionate amount was spent and £315,000 ($1,575,000) only was charged for arrears. In 1915 the amount spent was £500,000 ($2,500,000) more than in 1913, but £2,477,000 ($12,385,000) was charged for arrears. In 1916 £15,212,000 ($76,060,000) was spent and £3,203,000 ($16,015,000) was charged for arrears. In 1917 £17,621,000 ($88,105,000) was spent and £3,668,000 ($18,340,000) was charged for arrears. In 1918 £21,888,000 ($109,440,000) was spent and £3,327,000 ($16,635,000) was charged for arrears, and in the first half of 1919 £14,157,000 ($70,785,000) was spent and £358,000 ($1,790,000) was charged for arrears. It will be noted that the jump in maintenance of equipment expenditures came a year earlier than in maintenance of way expenses, which is what would be expected if we are correct in assuming that a part of the large increase in maintenance expenses and charges in the later years of government operation are the result of accumulated deferred maintenance.

The English divide their transportation expenses into two general classes, those pertaining to the cost of running locomotives and those pertaining to train and station costs. Notwithstanding the fact that fuel is the largest item of locomotive running expenses, the so-called traffic expenses, which include train and station expenses, more than kept pace with the increase in locomotive running expenses. This is probably due in part to the very low wages paid to station agents, ticket collectors, porters, etc., prior to 1914. The increase in wages to this class of employees was proportionately greater even than the increase in fuel costs. Locomotive running expenses in 1913 amounted to £17,131,000 ($85,655,000) and increased steadily until in 1918 they were £29,974,000 ($149,870,000), and in the first half of 1919, £18,168,000 ($90,840,000) or at the rate of more than £36,000,000 ($180,000,000) a year. So called traffic (train and station) expenses amounted to £23,261,000 ($116,305,000) in 1913, and steadily increased until they amounted to £41,622,000 ($208,110,000) in 1918, and to £25,513,000 ($127,565,000) in the first half of 1919, or at the rate of over £51,000,000 ($255,000,000) a year. The increase in 1918 over 1913 in locomtive running erpenses was 43 per cent, and in traffic expenses 44 per cent.

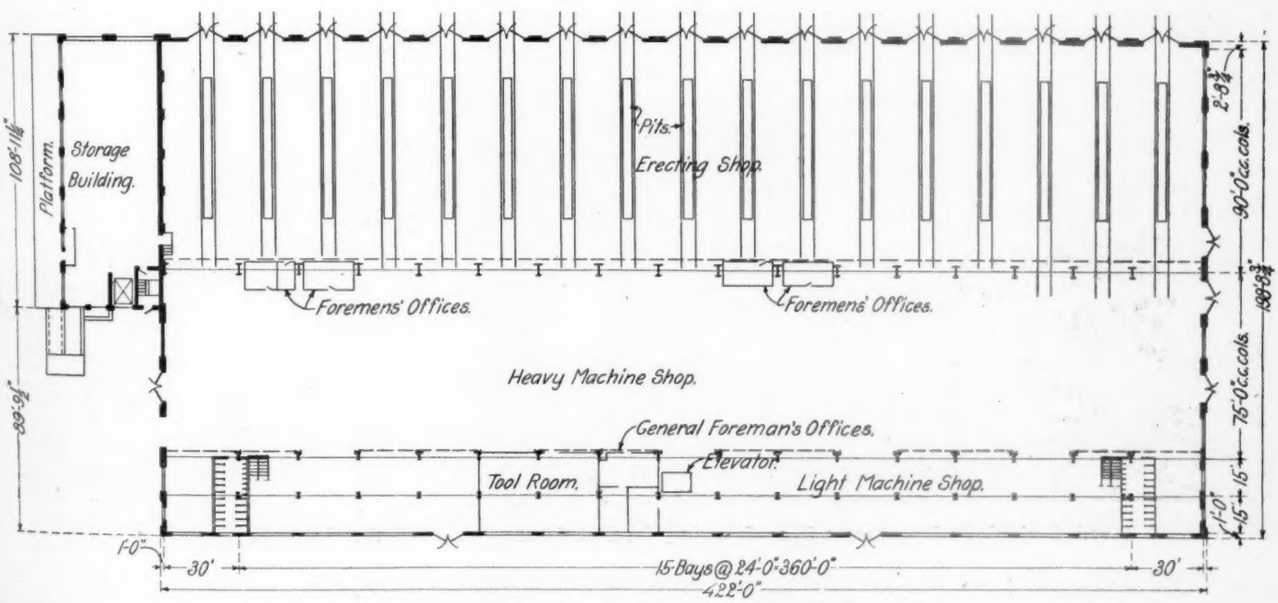
Had the English roads been returned to their owners at the end of 1918, the results of operation by the government would have placed but a very slight burden on the tax payers. The forecast which Sir Eric Geddes makes for the fiscal year ending March 31, 1920, is based on an expectation of traffic continuing at about the 1918 volume, but with a great increase in expense over 1918. If the estimate is correct, it shows a serious situation for the English railroads.

Heavy Machinery Bay, Logansport Shop

Pennsylvania Lines Improved Locomotive Facilities

Shop at Logansport, Indiana, and Roundhouse at Stark, Ohio, Illustrate Character of Designs Developed.

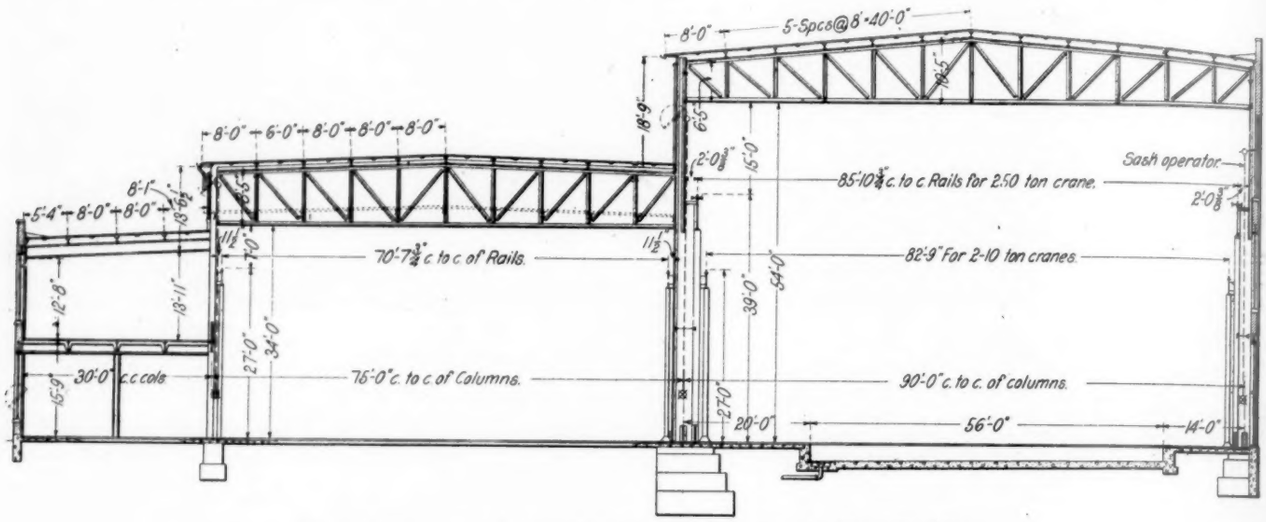
THE PENNSYLVANIA LINES WEST of Pittsburgh have probably made more extensive improvements and additions to their shop and engine terminal facilities in the last two years than any other railway system in the country. To some extent this has involved the extension of existing facilities, but in large measure it has involved the construction of complete new structures and in several cases of entirely new layouts. These new developments are of special interest as indicating the trend of modern design, and exemplifying the development and application of standard plans, as the principle of standard structures was applied extensively in this terminal program of the Pennsylvania Lines. At the Columbus (Ohio), locomotive shops, existing facilities have been extended so that this will serve as the central heavy repair shop of the Southwest system, while at Logansport, Ind., and at Stark, Ohio, complete new locomotive shops are being provided which, while smaller than those at Columbus, are to be equipped to take care of all locomotive repairs except those involving firebox renewals. These shops are, moreover, of special interest because the same standard design was applied at each point.



Plan of the Logansport Shop Building

In the case of engine houses, extensive additions to existing houses have been made at Logansport and Columbus,

while at Stark and Crestline, Ohio, Richmond, Ind., and one or two other points complete new roundhouses have been built, several of which conform to a standard plan that is notable for the novelty of design and the introduction of a number of unique features. For this reason, the following description of an example of a heavy repair locomotive shop recently put into operation at Logansport, Ind., and of a new roundhouse at Stark (Canton), Ohio, now nearing completion, will be of interest.



Cross Section of the Standard Locomotive Repair Shop Building

The Logansport Shop

The new shop at Logansport occupies a site at the extreme end of the shop property where a space could be had which was not being actively used in the shop operation, thus reducing interference between the construction and shop activities to a minimum. Another advantage of the site arose from the fact that rock underlies the natural ground surface at a depth of only four or five feet. The new facilities include a shop building 195 ft. by 422 ft. with a storehouse wing at the north end 37 ft. by 109 ft., a transfer table 60 ft. wide extending the entire length of the building and a parking space for locomotives consisting of 20 short tracks occupying a strip of land 72 ft. wide on the far side of the table. Access to the shop is afforded by lead tracks at each end of the building, connecting with the transfer table. At the south end of the shop there is a material yard, provided with a 10-ton gantry crane of 75-ft. span.

The shop proper consists of a 90-ft. erecting bay, a 75-ft. heavy machinery bay and a 30-ft. auxiliary bay which was built with a second or mezzanine floor. The ground floor of the 30-ft. bay is devoted to toilet rooms, fan rooms, general foreman's office, tool room and light machinery work, while the mezzanine floor is used for a tin shop, headlight repairs, air brake inspection and testing and locomotive pipe fitting.

The predominating feature of the erecting bay is the provision for two craneways, one above the other. The upper one carries a 250-ton Morgan crane equipped with two trolleys, each of which is provided with one 125-ton hook and one 20-ton auxiliary hook. This bay has a clear headroom of 54 ft. while the top of the upper craneway rail is 39 ft. and the lower craneway rail 27 ft. above the floor level. The lower runway carries a 10-ton Whiting crane. The erecting bay contains 17 engine pits 56 ft. long and spaced 24 ft. center to center. These pits all drain to the west end where catch basins are connected with a sewer system.

North End of the Logansport Shop Showing the Storehouse Wing and the Concrete Roadways

The 75-ft. bay which contains the heavy machine tools

is equipped with a 10-ton traveling crane. The roof is supported by roof trusses 34 ft. clear above the floor and grouped in pairs to form transverse monitors which afford the high degree of overhead lighting necessary to the absence of light from the sides of an interior bay.

In point of construction this building is typical of modern industrial plant practice, with steel columns and roof trusses, exterior curtain walls of brick with large window areas. The great height, wide span and heavy crane loads in the erecting bay necessitated extremely heavy construction in the columns, especially those between the 90-ft. and 75-ft. bay which make provision for two crane-ways on one side and one on the other. These columns weigh 21,940 lb. each. The mezzanine floor is of reinforced concrete supported on steel columns and girders. The roof is composed of 2-in. yellow pine decking on the steel purlins covered with a built-up roofing. The down spouts are of Aspromet corrugated asbestos covered steel. All floors with

Erecting Bay, Logansport Shop

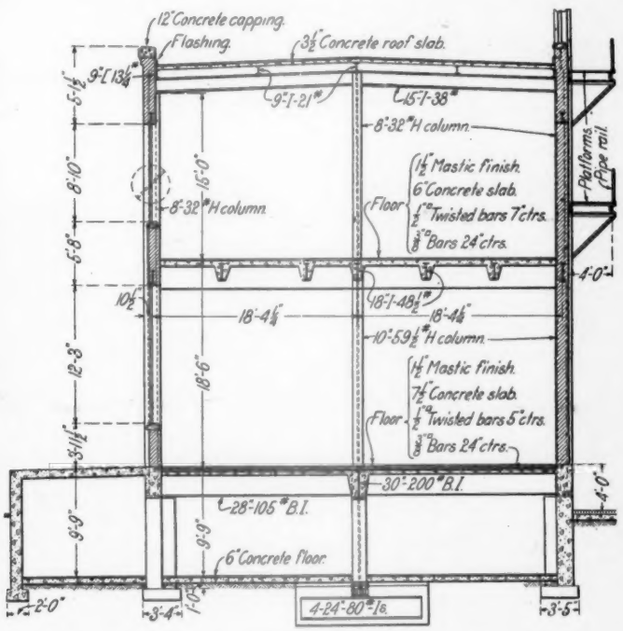
the exception of those in the toilet and wash rooms are creosoted wood blocks on concrete base. The toilet and wash room floors are covered with Sarco mastic, finished with a flashing 6 in. high against the walls on all sides.

The equipment of the building is operated by electric power supplied from a motor-generator set taking 3-phase, 60-cycle, 2300-volt alternating current and delivering direct-current at 250 to 275 volts.

The illumination has been well worked out. Natural light is supplied through large areas of factory-ribbed glass, mounted "rough side cut" in Truscon steel sash in addition to the monitor lighting previously mentioned. Artificial lighting in the 90-ft. bay is provided by 750-watt lamps placed in X-Ray shades, one of which is attached to the bottom of each roof truss, the position on these trusses alternating from the quarter point at one end of the truss to the quarter point on the other end of the next truss. In addition to this system of lighting, there are four 50-watt lamps spaced uniformly along the center line of the building to serve as illumination for the night watchman service. In the 75-ft. bay five lamps equipped with "intensive light" shades are provided in each panel.

The Heating System

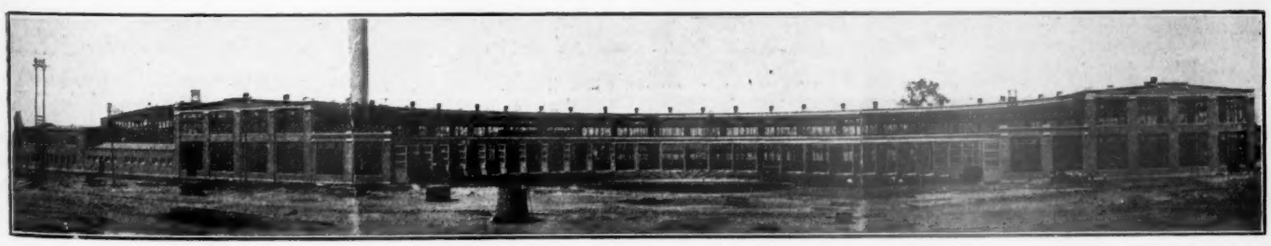
The building is heated by the Vento system of hot air heating. This installation consists of duplicate plants, serv-



Cross Section of the Store Building at Logansport

ing the north and south halves of the building, respectively, and having fans and heaters located in the extreme north and south ends of the 30-ft. bay. Each power unit consists of a No. 10 Sirocco blower driven by a 20-hp. alternating-current motor, drawing air from the outside through a six-unit heater, and blowing the heated air through conduits to outlets in various parts of the house. For the 30-ft. bay, overhead sheet metal conductors were provided but in the two main bays underground concrete conduits were installed, leading to a row of eight outlets along the center line between the 90-ft and 75-ft. bays and 17 outlets along the outside wall of the erecting bay. Live steam is used in the heaters and a small motor-driven pump returns the condensation water to the boilers. Louvers for the admission of air from the outside are provided with adjustable vents so that a smaller amount of outside air may be taken in cold weather in conjunction with a certain degree of re-circulation of the air within the building.

Power service from the power house consists of a six-inch



General View of the Stark Roundhouse

steam main, a three-inch condensation return pipe and a four-inch compressed air line. These are conducted through a concrete conduit, the top of which consists of pre-cast concrete slabs equipped with lift bars for ready removal.

Toilet facilities for shop employees are installed on the first floor at each end of the building and wash and locker rooms containing a total of 315 lockers on the mezzanine floor directly above. Provision has also been made for toilet facilities and lockers for women employees of the shop at the north end of the messanine floor.

The Store House

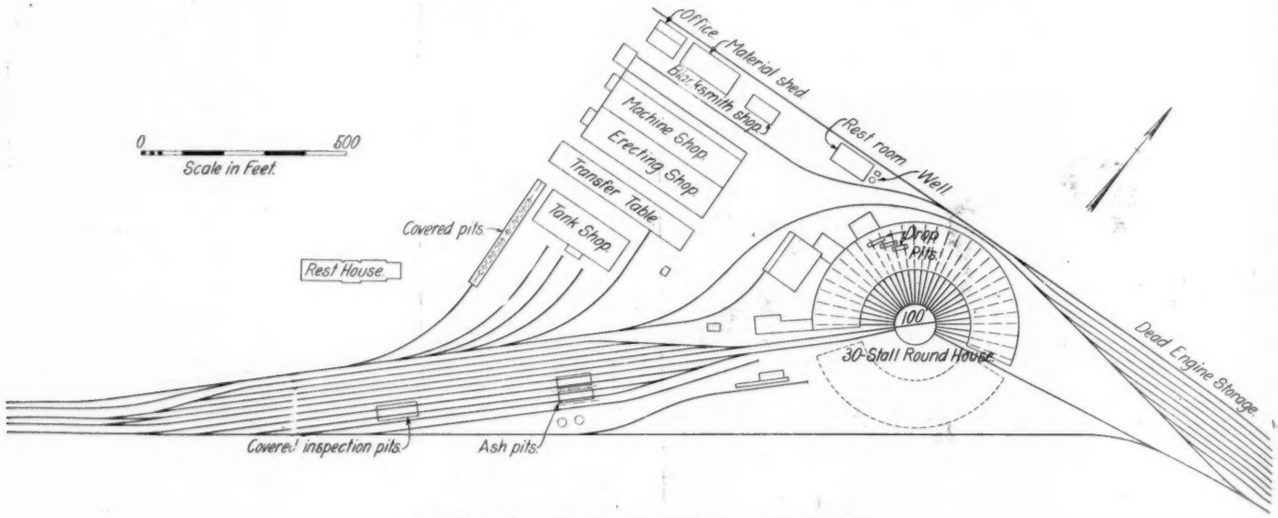
Store space is provided in a wing at the north end of the building, 37-ft. wide by 109 ft. long with two stories and basement. It has a steel frame, brick walls and concrete-covered girders and beams supporting reinforced concrete floors. The first floor is designed for a load of 600 lb. per sq. ft. and the second for a load of 350 lb. per sq. ft. With the exception of offices for the storekeeper and clerks on the second floor, the space in the building is taken up entirely by tiers of shelving. Loading and unloading from cars is facilitated by a concrete platform extending the entire length of the wing, the space underneath this serving as an addition to the basement area.

Interior of the Stark Roundhouse During Construction

The transfer table pit is 60 ft. wide by 532 ft. long and is equipped with five lines of 85-lb. A. S. C. E. rail to carry a table of 250 tons capacity. As in the case of the building, the presence of a rock foundation greatly simplified the construction. The rails are carried on continuous walls of concrete supported on the rock. The space inside the curb walls is paved with a concrete slab which slopes to four lines of drains. The table is operated by a 75-hp. motor at a speed of 100 ft. per min. with full load.

Another facility occupying a separate building is an electric welding shop 20 ft. 2 in. wide by 100 ft. long. This is divided into five separate rooms of which three are for electric operations, one for gas welding and one for the motor-generator set used to convert 3-phase, 60-cycle, 220-volt alternating-current to 75-volt direct current.

Inter-shop transportation is conducted very largely by the use of electric industrial trucks and this service has been greatly facilitated by provision for a concrete roadway along the west side of the building, at the angle at the north end adjacent to the storehouse wing and leading to other buildings and to the street entrances.



Layout of the Engine Terminal at Stark, Ohio

The Construction

The construction work was carried on under a contract with the Austin Company, Cleveland, and was handled in a manner to secure early completion although failure of steel delivery as a result of war conditions greatly interfered with the record for expeditious progress. Thus while the steel was scheduled to be delivered entirely by September, 1918, the last of it did not arrive until March, 1919. Considerable of the excavation, particularly for the transfer table was moved by a steam shovel. Concrete was mixed by a mixer mounted on a flatcar with cars of stone, sand and cement placed on the track to the rear of it in the order named. A platform erected alongside this track for each position of the cars was used for wheeling materials to the machine. The concrete was dumpted into two-wheeled carts of 6 cu. ft. capacity and wheeled to the point of delivery in the forms. About 12,000 cu. yd. of filling was placed in the shop building for which sand hauled from a pit on the railway was used. This was thoroughly wetted as it was placed and became thoroughly compact so that the concrete floor slabs could be laid on it without danger of settlement. The walls of the building contain 835,000 brick of which a large part were laid at the rate of 250,000 bricks per week, and the entire east wall of the shop was laid in 14 working days. Hanging scaffolds supplied by the Patent Scaffold Company, Chicago, were used for this work. The steel was erected with a double-boom traveler.

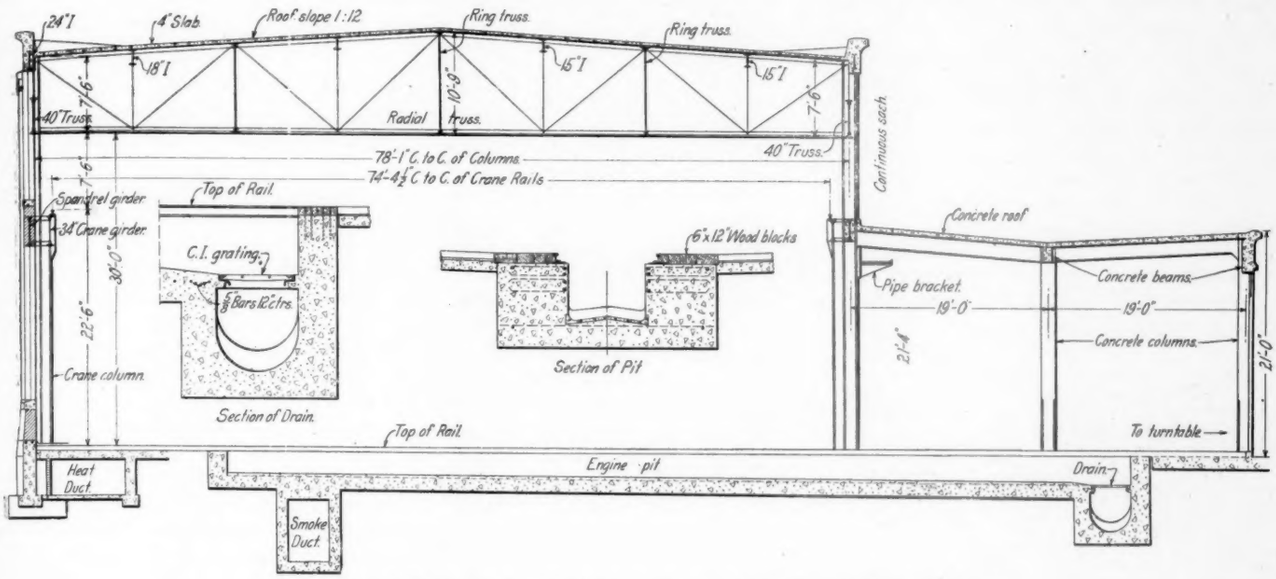
The Stark Engine Terminal

The engine terminal at Stark occupies a triangular piece of ground along the north side of a freight classification

yard located about two miles east of Canton, Ohio, the terminal having connections with the yard both to the east and to the west, with the main approach from the west. Inbound locomotives come in over the south track of the layout which expands into four tracks for the accommodation of the inspection and cinder pits, although only the two center tracks pass through the inspection shed. The outbound track is north of the inbound tracks and has a separate connection with the turntable. North of the outbound track and with a lead connecting to it is a four-track engine storage yard with space for 44 85-ft. engines. The inbound and outbound tracks and the lead from the engine storage yard are served by a coaling station at the extreme west end of the layout and also by two penstocks located just west of the coaling station. Water supply is also provided by a third penstock located between the inbound and outbound tracks near the turntable. To the west of the roundhouse is a complete locomotive repair shop very similar to the one at Logansport, the principal difference being that the shop building is 30 ft. shorter that the one at Logansport, while a separate building 90 ft. by 300 ft. has been provided for a tank, wheel and pipe shop. A section of this group of buildings is shown in the same illustration as the map.

The roundhouse contains 30 stalls with space for the future addition of about 20 stalls more. The unusual features embodied in this engine house may be ascribed almost entirely to the desire to provide a traveling crane and to maintain the house as free as possible from gases from the locomotives. Provision for the traveling crane led to the adoption of a three-bay construction which comprised a wide, lofty bay for the traveling crane along the outer side of the house with two lower bays at the turntable side. The presence of the traveling crane did not permit the use of smoke jacks. Monitors in the roof were deemed ineffective in the removal of the smoke to a degree that would not be objectionable from the standpoint of illumination, corrosion of the steel work or discomfort to the crane operator, so it was decided to install a smoke exhaust system although there was no call for this in the way of public objection to smoke nuisance. The predominating feature of the smoke collector is an upright smoke receiver having much the appearance of a water penstock, connected by a system of underground ducts to an exhaust fan in the power plant. As seen in the drawings these smoke jacks are placed between every second pair of stalls and consist of a riser pipe 24-in. in diameter fitted at the top with two 18-in. branches with universal joints and telescope extensions so that the nozzle may be inserted in the top of a smoke stack with considerable variation in the position of the locomotive and the height of the stack. The gases are exhausted through the fans mentioned above into the chimney of the power plant. Horizontal bottom discharge fans are used so that both the inlet and outlet ducts are below the floor level. Owing to the corrosive nature of the gases handled a minimum of rolled metal is used in the housing of the fan, the walls of which are made of brick with circumferential plates of flanged cast iron segments.

Structurally the building is of a composite type, the large bay having a structural steel frame and concrete roof, while the two lower bays are entirely of reinforced concrete. The exterior walls are brick but a large part of the area consists of windows with Fenestra Steel sash. A clear height of 30-ft. to the underside of the roof trusses of the crane bay results in the unusual height of 39 ft. 4 in. for the outside



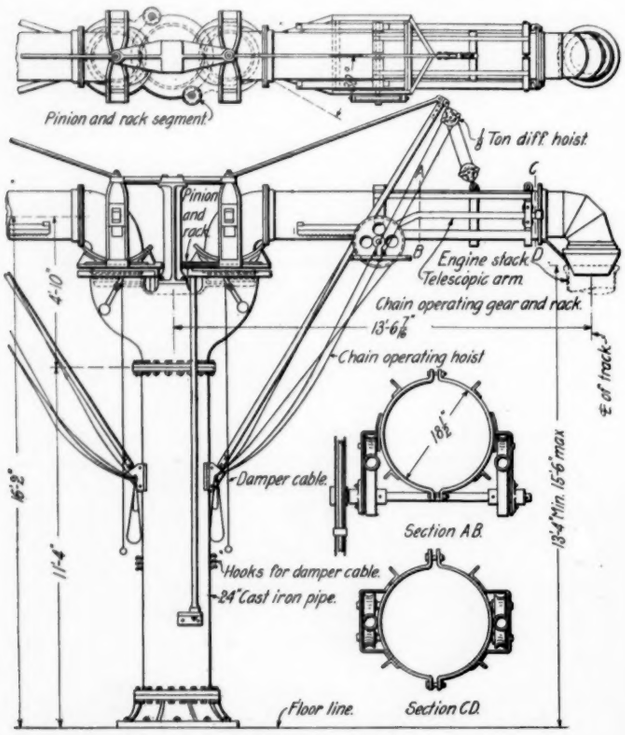
Longitudinal Section of a Typical Stall of the Standard Engine House

One of the Cinder Pits at the Stark Engine Terminal

wall so that two tiers of windows 15 ft. 9 in. and 15 ft. 5 in. high, respectively, give a large glass area for the outer wall of the house, which, together with monitor windows over the lower bays, provide unusual natural lighting of the roundhouse.

Artificial illumination is provided by two 200-watt. ceiling lamps in the low part of each stall and two 400 watt lamps in the high portion. The lamps are equipped with Maxolite fixtures. Current is supplied by a local public utility company.

The floor of the roundhouse is paved with creosoted wood blocks on a concrete base. The track pits are unusual in the exceptional width of walls as shown in the cross-sectional view. In the half of the pit nearest the table the wall is of sufficient width outside the rail to carry 34 in. of jacking planks while the outer end has somewhat narrower walls.



Smoke Exhaust Duct

The pits drain to a concrete drainage duct which also receives the drainage from the entire roof through down spouts.

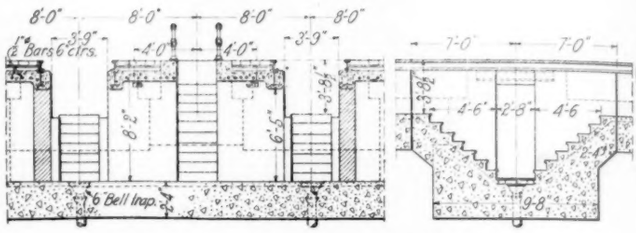
Three complete drop pits are provided, each embracing two-track pits in the manner indicated in the plan. The pits are of the type in which the ram is carried by a pit truck, a slot being provided in the bottom to accommodate the barrel of the ram. These pits have an average length of about 45 ft. with an inside width of 7 ft. 6 in. and a depth of 5 ft. 7 in. plus 5 ft. 4 in. for the ram slot.

The roundhouse is heated by the forced draft system of hot air heating common to most modern roundhouses, this system being very largely parallel to that for the smoke exhaust, that is, with the use of concrete ducts below the floor and vitrified pipe branches leading to outlets in the track pits. The heating system consists of two Sirocco pressure fans, one 65-in. and one 100-in., the smaller one to be replaced by a second 100-in. fan when the roundhouse is extended to the full number of stalls. These fans draw outside air through steam heater units and discharge the heated air into the concrete ducts.

Pipes for the washout, filling, blowout, cold water and air supply lines are carried on brackets attached to the inner side of the line of columns between the high and low parts of the roundhouse. Service from these lines is supplied at every other column while on the intermediate columns electric light service outlets are provided, these being six-plug revolving fixtures.

The Power Plant

The power plant occupies a separate wing to the rear of the house, connected with the latter by means of a smaller



Details of a Two-Track Inspection Pit

wing containing the heater and smoke exhaust fans. The main wing is 89 ft. by 108 ft. and contains a boiler room fitted with four 450 hp. boilers with space for one additional boiler. There is also an air compresser room 43 ft. by 60 ft., an electrical repair room and one for a boiler washout system. The boilers are equipped with automatic stokers and are served by a complete installation of mechanical coal and ash handling machinery in conjunction with a track hopper outside the building. Smoke from the furnaces is carried to a 150-ft. Custodis chimney of 11 ft. inside diameter which also takes the gases from the smoke exhaust system. To avoid interference between the natural chimney draft and the forced draft of the smoke exhaust fans, the

One of the Inspection Pits Covered by a Reinforced Concrete Shed

chimney is divided into two flues by a vertical diaphragm. Another wing of the building 55 ft. 7 in. wide by 50 ft. maximum depth serves as a light machine tool annex.

No small amount of attention has been given to the provision of adequate accommodations for engine house men and engine crews in a third wing of the roundhouse which also contains space for offices. This consists of a square two-story portion 58 ft. 7 in. by 67 ft. 4 in. which is connected with the roundhouse by a one story structure 32 ft. wide by 73 ft. 6 in. long. The lower floor of this wing contains toilet and locker rooms for engine men and engine house men and offices for the roundhouse foreman, road

foreman of engines and clerks. The second floor contains separate rest and toilet rooms for the shop and office women as well as a large record room.

The roundhouse is served by a 100-ft. turntable of the deck type which is unusual in that the table is turned by the application of power directly to the end wheels through line shafting from a motor mounted on one side of the table near the center. The trucks are equipped with spring bearings. Another detail which will add greatly to the possibility of keeping the turntable pit in a neat condition is a pavement of cull bricks in the pit.

Well Planned Inspection Pit Provided

One feature of the engine terminal is the complete provision made for inspection of incoming engines, in the form of a two-track inspection pit, covered with a reinforced concrete shed. These pits are 100 ft. long, 3 ft. 8½ in. deep and 16 ft. center to center, requiring a shed 37 ft. wide. To avoid the possibility of men being run over or injured while climbing in or out of the pits and to afford ease of access, the pits are connected by a transverse tunnel with stairways leading to the pits and from the tunnel up to the platform between tracks. This inspection pit is provided with a pneumatic tube connection to the roundhouse foreman's office for the delivery of inspection reports.

The ash pits are also of a design that differs considerably from prevailing practice. Two pits are provided, each serving two tracks 18 ft. center to center. As shown in the photograph the arrangement provides for the delivery of the ashes down an incline covered with paving brick to a central basin with the bottom 10 ft. 3in. below the base of rail level. Instead of using a locomotive crane to remove the cinders from the basin, a special crane mounted on a gallows frame is installed which travels on rails spaced 36 ft. center to center. This frame stands astride of the two tracks over one pit and has a cantilever projection to reach the basin of the other pit. With this arrangement the cinders can be removed from the pits without any interference with engines on the tracks. The outer rails of the running tracks are carried on the outer walls of the pit, while the inner rails are supported on built-up steel beams spanning between piers made of 18-in. cast iron pipe filled with concrete.

The Coaling Station

The coaling station is a reinforced concrete structure having a storage capacity of 700 tons, and was built by the Roberts & Schaefer Company, Chicago. The automatic hoisting equipment is capable of delivering 75 tons of coal per hour from the track hopper under the coal delivery track. Adjacent to this track is a wet sand storage bin, having a capacity of 1200 tons of wet sand. This wet sand is wheeled by hand to a hopper under a drying house built adjacent to the coaling station from which it is hoisted by a bucket elevator to a 60-ton storage bin over a battery of two Pennsylvania Lines coal-burning dryers. From the latter the dry sand is spouted down through screens to a pneumatic discharge which delivers the sand to a 10-ton wooden storage tank located in the top of the coaling station.

The engine terminal at Stark is being built by the Walbridge, Aldinger Company of Detroit with the exception of the coaling station and the design and installation of power plant equipment which is being handled by Westinghouse, Church, Kerr, New York. All of the terminal improvement work on the Pennsylvania Lines has been carried on under the general direction of Robert Trimble, chief engineer construction, Pennsylvania Lines, Pittsburgh. The work at Canton was under the supervision of T. M. Bole and later H. W. Hinkley, engineers in charge. The improvements at Logansport were under the immediate direction of W. E. Guignon, division engineer and T. L. Doyle, assistant division engineer.

French Opinions of American Methods of Railroading

By Francis Jaques

IT IS INTERESTING, in talking with French railroad men, to hear their views of the improvements which the American Transportation Corps introduced into French methods of railroading during the war. The French have been particularly enthusiastic over certain features, some of the most important of which are mentioned here.

Train Despatching Methods

One which impressed them most favorably was the American method of train despatching. This was tried experimentally at the end of 1918 on the Paris-Orleans, between St. Nazaire and Saumur, a distance of about 115 miles, and the results were excellent. Four French train despatchers were installed in the American Transportation Office at Saumur to learn the despatching system. The chief despatcher was a man peculiarly fitted to acquire and appreciate the value of these new methods, and he and his three associates were immediately impressed with the opportunities which the centralized system of train control offered for improving train operation.

The Frenchmen were quite unfamiliar with the apparatus used in telephone train despatching, and had not before realized the peculiar adaptability of the selective telephone system for handling train movements. The rapidity with which officers were called, either singly or in groups, the clearness of the lines and the mechanical accuracy of the selective apparatus were a marvel to them.

These French despatchers quickly saw the good points of this centralized system of train control and when asked their opinion of this method, after they had tried it for a certain time, stated that they believed that it was better than their own system because it offered the following advantages: A perfect knowledge of the location of all train movements, delays, congestion, etc.; the possibility of giving advance information to the terminals as to the probable time of arrival of trains, thus facilitating the preparation of engines, crews and equipment and their proper use; the elimination of useless side tracking and the intelligent arrangement of movements out of turn; and also the chance of relieving an overloaded line in case of need. American railroad men are naturally familiar with all of these advantages, but they were a revelation to the French who had never before had a practical demonstration of this method of train despatching.

Because of the success of the trial on the Paris-Orleans between St. Nazaire and Saumur, the Paris, Lyons & Mediterranean is now installing the despatching system on the heaviest section of its line between Dijon and Lyons, and later it intends to put it in all the way from Paris to Marseilles—a distance of 550 miles. The Est is also going to adopt this improvement, and it has already begun to introduce the despatching system on the line from Paris to Metz.

Passing Tracks at Stations

Another thing which the A. E. F. transportation officers made the French realize was the importance of getting trains off the main lines by the use of passing tracks at stations where trains took water or coal, or waited for orders. A great many passing sidings were constructed, and others lengthened, by the A. E. F. during the war. This was, in fact, the chief means employed to increase the capacity of roads for, contrary to the generally believed myth, the Americans constructed very few entirely new lines.

The longest passing tracks in France before the war were not over 1,625 ft. (500 meters) long and, as they were too short to handle American trains, they were therefore lengthened. At first they were made about 2,210 ft. (680

meters) long, but towards the end of the war some were being lengthened to 2,372 ft. (730 meters). The improvement in train operation was most marked as a result of the lengthening of the sidings and of their proper use. Where these passing tracks are still useful for future commercial needs they will be kept. Where they were purely for war purposes and are no longer required, they will be removed and the material will be used elsewhere.

American Locomotives in France

With regard to locomotives, the French were favorably impressed by our engines for freight service. They consider them more suitable for this work than their own locomotives as they are simpler and contain fewer refinements. They therefore get out of order less easily and can be more readily repaired.

At first the French had considerable trouble due to the heating of the bearings, but this was chiefly because they did not understand them. Later they had no more difficulties on this account. They also had to make some slight changes in the buffing arrangements. Otherwise they found our freight locomotives adapted for their work, and they used them to great advantage during the war.

French ideas in regard to locomotives have recently changed radically. The "old school" of railroad engineers had gradually worked up a type of compound locomotive in order to obtain certain economies, particularly in the consumption of coal which is very expensive in France. With the introduction of the superheater, the results given by the simple locomotives equipped with this apparatus began to be quite as good as those given by the compound locomotives, whereas the use of superheated steam with the latter type added little to its value. For this reason the younger engineers, of the "new school," believe that it is better to construct, at the present time, two-cylinder simple locomotives equipped with superheaters, as they do not consider that the economies obtained by the use of the compound locomotives are sufficient to compensate for the high initial expense and the great cost of maintenance of this complicated type. A committee formed by the Paris, Lyons, Mediterranean, the Midi, the Paris-Orleans and the State Railroads is, therefore studying designs of two-cylinder, simple locomotives equipped with superheaters as being the best type for the immediate future in France.

It may be here stated that the A. E. F. left 1,333 locomotives in France divided up according to type as follows:

American	150
Baldwin	1,143
Saddle Tank	30
150 H. P. Gasoline	10
Total	1,333

American Freight Cars in France

The French considered the big American cars exceedingly practical, for in France cars of 10 tons (2,240 lb.), or less, capacity were used before the war. It is probable that all cars of less than 10 tons capacity will gradually go out of service, and that 20, 30 and 40-ton cars will be used almost entirely. The large American cars left in France by the A. E. F. will continue to show the excellent practical results of the use of larger cars, and this will soon lead to their being adopted universally. The tariff minimums will, of course, have to be adjusted because of the increased capacity of the cars and this question is now being studied.

	Number	Average Capacity
Box	8,649	33 tons
Flats	2,050	33 tons
Open	6,779	30 tons
Tanks	850	10 tons
Petrol Tanks	43	5,000 gals.
Refrigerator	1,450	25 tons
Ammunition	65	20 tons
Total	19,886	

It is interesting, in this connection, to note the foregoing figures, corrected to April 1, 1919, relative to the number of American freight cars left in France by the A. E. F.

Arrangement of Yards

The French consider the American yard layouts better than their own as being simpler, and for this reason more economical to build and to operate. They are planning to use some of the best features of our yards when building future yards in France.

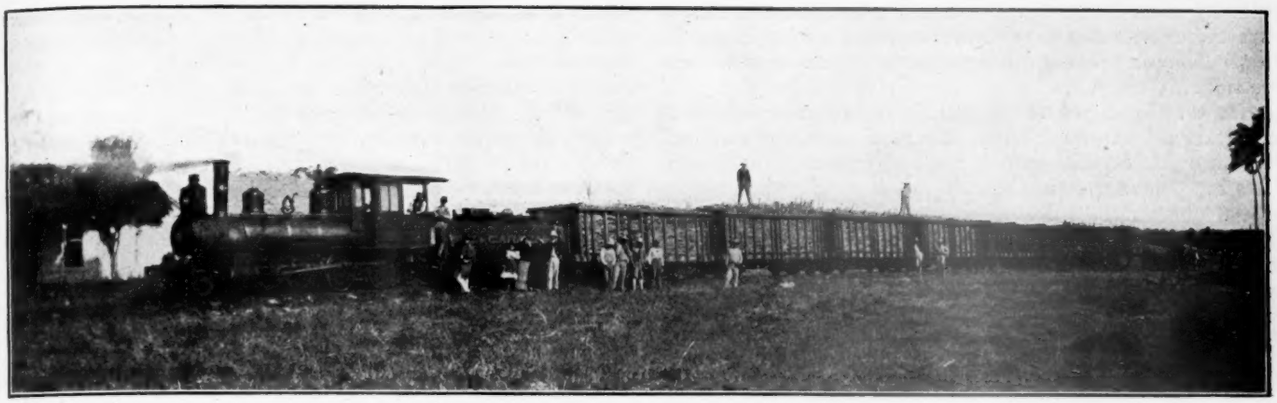
Labor-Saving Machinery

The leading French engineers were enthusiastic, too, over the improved American shop machinery, and they intend to introduce it into France as fast as possible. This is particularly important, for it is necessary to economize in every way possible in labor to make up for the lack of operatives due to the large number of men killed during the war. Improved methods will have to be used also to compensate for the high wages which the railroads are now forced to pay.

The former prejudice of French workmen against modern machinery, because it reduced the number of laborers and so took away their jobs, is no longer as strong, particularly among the better class of workmen, as they are beginning to realize that they reap many advantages by the introduction of modern improvements; for instance the ensuing reduction of the high cost of living.

The heads of all the railroads are determined to put in this modern shop machinery as soon as they are able to do so; but this will require a tremendous initial expense. The great question is how to obtain the money for all such improvements. Loans and imports both affect the rate of exchange of the money market in a way which is disastrous to France, as is shown by recent events and yet these improvements are, in the end, absolutely essential for regaining the prosperity of the country. A rapid solution of this difficulty is most desirable for the future of France. Whether this would lead to the placing of large orders in America by the French railroads for shop machinery, etc., is a question, for it is the present policy of the government to restrict importations, thus preventing the placing of orders for railroad equipment and material elsewhere than with French firms, even when better prices and deliveries can be obtained abroad. This is done to help build up French industries and to offer employment to the demobolized soldiers, as well as to keep down the rate of exchange. One can readily understand this in cases where there is no immediate haste in procuring the finished articles. There are, however, many people in France who believe that certain machinery, such as railroad shop machinery, for instance, should be imported at once in order to permit the fast development of transportation facilities which are so essential for the future prosperity of the country.

It will be seen from the foregoing that, after studying American railroad methods introduced by the A. E. F. in France during the war, French railroad men propose to change French methods of railroading notably by: the introduction of the American despatching system; the increased use of passing sidings to keep trains off the main lines; the adoption of a simpler type of freight engine; the use of larger cars; the simplyfying of yard layouts, and the introduction of modern shop machinery. They believe that, although railroad conditions are entirely different in France than in the United States, they can use American experience and methods to great advantage. In the same way, American railroad men who were in France with the A. E. F. have gained a broader experience and many new and valuable ideas from their contact with the French. The cordial relations established between the Americans and the French during the war will certainly lead to a constant exchange of ideas in the future which will be most valuable for the entire railroad world.



Loading the Cane Train.

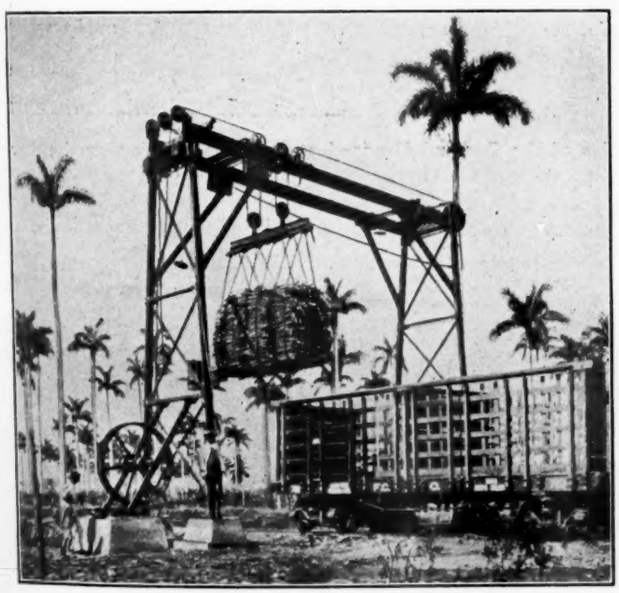
Cuba's Sugar Cane Railways a Large Market*

The Importance and Extent of the Sugar Plantation Lines—Possibilities for Improvements

By John P. Risque

Part III—Loading and Transporting the Cane

ALTHOUGH MECHANICAL CANE CUTTERS have appeared in a variety of designs in an effort to expedite and speed the big job of getting the cane to the mill, their success and adoption is measured by the cane growers' tenacious reliance on the wielder of the *machete.* These thousands of hand swung knives of great length and width have no apparent difficulty in keeping ahead of the supply of cars. In order to make up the deficiency in the supply of Cuban cane field labor, the passenger business of the main lines from the various ports, up and down the island, is considerably augmented by the arrival of thousands of professional harvesters who annually come from various parts of Spain and the Canary islands.



The "Trasbordador" or Cane Loader

Hand in hand with the methods of the primitive, but reliable hand cutters, go the traditional ox-carts with their eight-foot wheels. These cumbersome vehicles equipped with cane racks or bodies, called *jaulas,* collect the cane from the cutters in the fields and a sleepy looking pair of oxen slowly drag their burden to the *batey,* or park in front of the mill, if close by. If the mill is remote from the field, the cart is driven to the *trasbordador* at the side track of the plantation railway or the main line, as the case may be.

The process of unloading the cane from the carts to the waiting cane cars by means of the *trasbordador* or hoist is one of the few efficient links in the chain of transportation steps from the field to the mill. This apparatus is generally a simple drum hoist driven by oxen and occasionally by a gasoline engine. Its action is quick and efficient. The cart is weighed, checked on the books in favor of the contributing *colono,* chains swung around the load of cane which is quickly hoisted and swung over into the cane car. The train from the mill leaves a section of empty cars on the siding and on its return picks up the loads.

Burned cane is a bugbear that is a steady threatener; such cane must be gathered and ground before fermentation sets in. It is generally understood that burning his cane is the last desperate resort of the *colono* who is unable by threats or otherwise, to cajole trains to his district; a questionable method to be sure, but one which is usually successful as it means a choice between a total or a partial loss for all concerned.

Waste of Cane

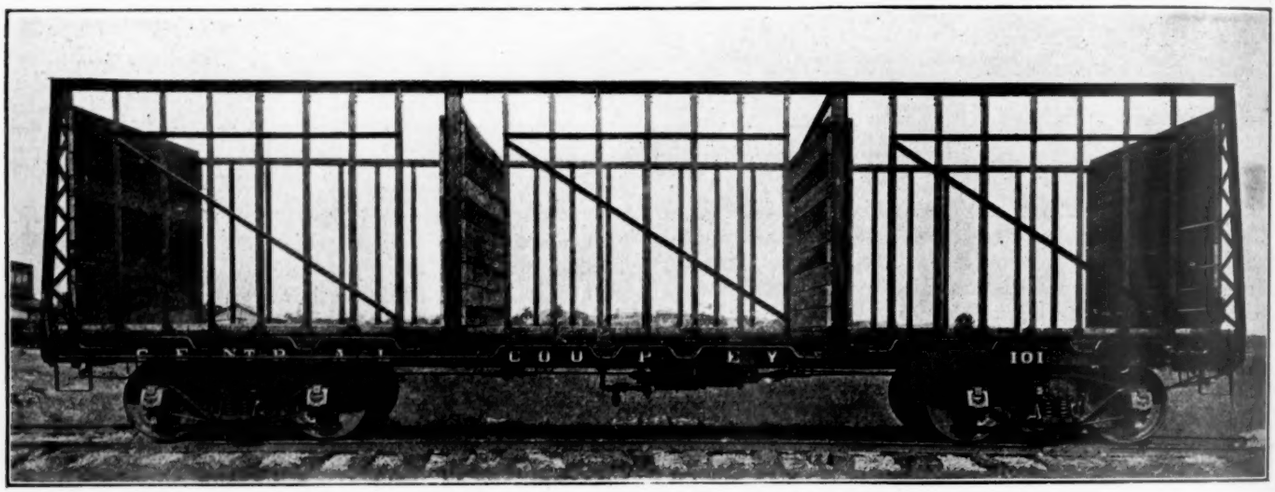
If all the good sugar cane that is strewn along Cuba's cane railroads were added to the amount "lifted" from the cars at water tanks and way stations during the *Zafra* by well meaning native connoisseurs of raw cane, the total would doubtless run a mill a whole season. An investigation of the cause of more or less frequent complaints from *colonos*

*This is the third of three articles on the sugar plantation railways of Cuba. The first appeared in the *Railway Age* of October 17, and the second in the *Railway Age* of October 24, 1919.

claiming short weights would reveal a considerable loss of cane through the tendency to overload and wrongly load the cars. The cane shakes off the top or slides through between the stakes.

If the railroad end of the mill is not running behind in supplying the required hourly amount of cane, the yard will show it by the lines of waiting loads on the spare mill tracks. Cars are detached from the line one at a time (in the case of end dump mills), drawn by oxen onto the tipping table, upon which the car is then chained down, the table mechanically inclined, the door latch released and the cane dumped out into the hopper. The dumping platform is then lowered, the car unchained, and the car as slowly and methodically withdrawn to the empty track by the waiting ox-team.

Mills arranged for the accommodation of side dump cars carry their entrance tracks over the tipping table and on past the receiving table, the table tips sideways, the cane is dumped from the side and when the table is returned, the train is pushed forward and the next car takes its place. In both of these cases—side and end dump—a light 0-4-0 saddle tank locomotive is utilized by some mills, dependent upon the capacity of the hopper to take care of such accelerated movement. Old mills to which additional rolls have been added or otherwise speeded up are most logical candidates for switchers to supersede the oxen.



Typical Three-Compartment Car. The Cane Is Loaded Lengthwise of the Car and Dumped at the Mill by Tipping the Car and Opening the Side Bars and Gates

The principal product of the mill, raw sugar, is packed in bags of 320 lb. each and stored in the plantation's sugar warehouses (or in the locomotive shed if there is one) or shipped in their own sugar cars to main line cars, to port. Molasses, which constitutes a small percentage of a mill's product, is most often shipped from the mill in main line tank cars. There are a few molasses cars owned by the plantation — luckily so, if the numerous complaints of "molasses on the tracks" (due to faulty condition of the cars) is any criterion.

Various complications exist in the transportation of sugar from the mills to ports, among which may be mentioned the very singular combination which governs the haul of sugar from one of the Santa Clara mills to a port near the city of Cienfuegos on the southern coast. The sugar cars of this plantation are provided with narrow gage bodies mounted on standard gage trucks. Extra long body bolsters of these cars carry steel rings at their outer ends. When the train arrives at the end of the standard gage line the cars are put under a four-post steel frame work, equipped with four hand-operated hoists—ordinarily chain blocks. The chains are hooked to the rings and the laborious job of raising the loaded car from the standard gage trucks by hand begins. Narrow gage trucks are rolled under the cars, one by one, and when the job is complete the re-equipped train proceeds on its way. A formidable crew of men is stationed at this point during the crop movement to take care of the business of swapping trucks and the three or four narrow gage locomotives which take care of their end of the business, repose in the open field when not otherwise engaged. Thus occurs another item in the cost of transporting sugar to the refinery, and consequently a relative enhancement in the cost of the finished product itself.

Cane Transportation Experiments

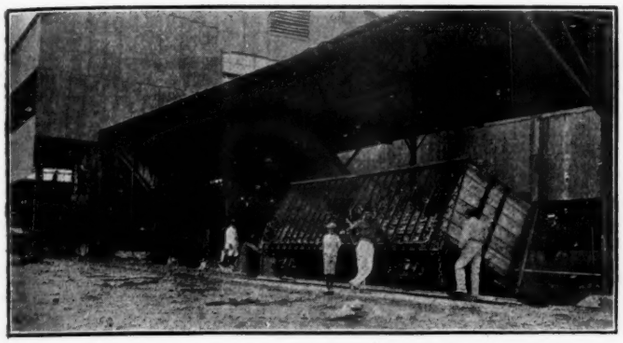
The vexing problem of field to mill has received serious thought and the expenditure of considerable money, not only by the pioneer of cane car construction, but from one of the best known sugar engineers of the island—the present manager of a large company. To a certain extent portable light railways are laid from the main stem of plantation lines with considerable success, but their use has not become general. It is understood, however, that under the present conditions, —an increase in the value of oxen of about 150 per cent—the complexion of the cane field during the *Zafra* is due for a change, and the portable railways will compete with the tractor for efficiency. The introduction of a caterpillar tractor drawing several trailers is as yet considered an innovation. The trailers are provided with wide tread wheels and removable bodies, which when loaded are slid over on to the empty frames of a narrow gage train of cars on the mill's permanent railway.

Business Opportunities Among the Plantations

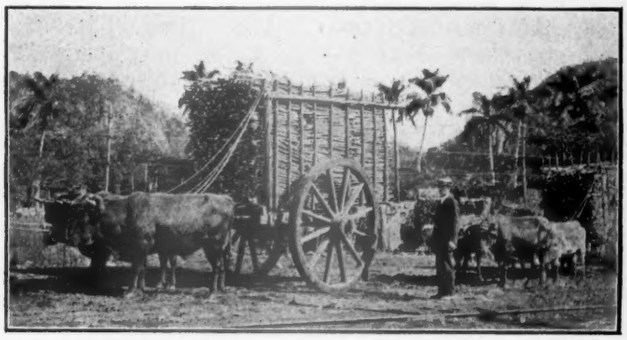
It has been the intention in this article to indicate primarily that there is a wide possibility for improvement in the repair facilities of locomotives owned by plantations in Cuba. Incidentally the field is open for an entirely new system of collecting cane; the eventual elimination of the patient *buey* (ox) and his cumbersome cart, however, painful to tradition, is none the less certain. Further sale of electric headlights is assured (two to a locomotive, for they back up as much as they go forward—there are no turn tables and but few wyes) as they are fast becoming recognized as nearly indispensable.

Shop equipment and storehouses naturally follow in plans for locomotive maintenance. Painting machines have not as

yet had a good tryout, although the United Railways maintain a special painting department, equipped with air machines. Plantation cars are painted by hand and it is slow work—and this job is a very necessary one owing to the excessive rust creating qualities of the climate. Oil storage tanks, piping and tank cars will be required as conversions to oil increase. Tube reclaiming machinery will eventually come into use when sufficient sugar warehouses are erected.

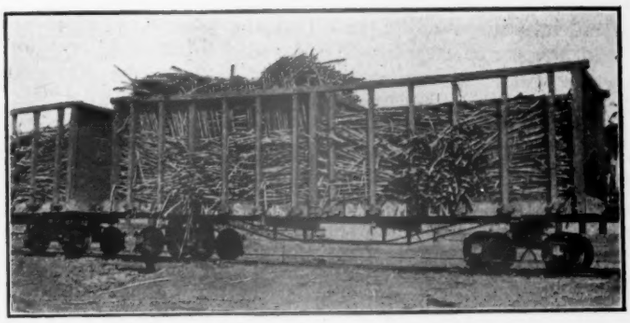


A Side Dump Car at the Tipping Table

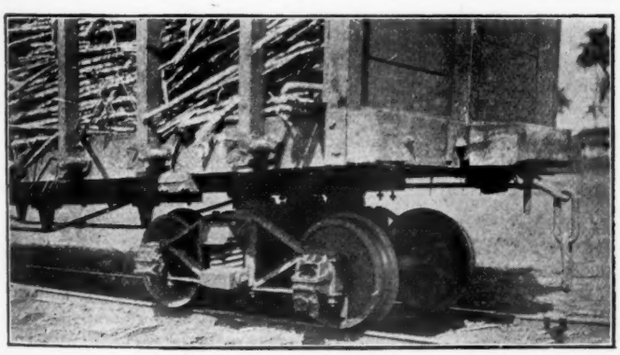


The Famous "Careta" or Ox-Cart

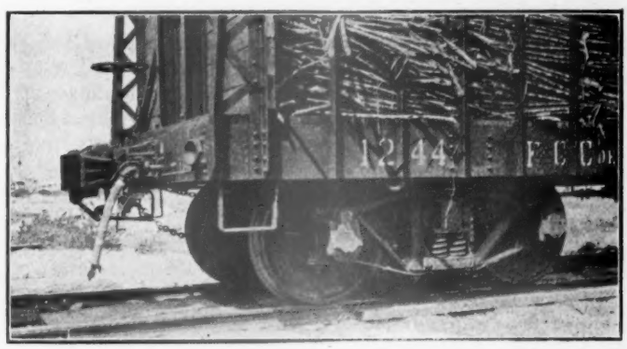
An Example of Good Cane Loading and a Modern Type of Cane Car



The Wrong Way to Load Cane—a Wooden Car Without Brakes



A Narrow Gage Wooden Cane Car; Note the Opportunity for Brakes, Couplers and Better Journal Box Lids



The Other Extreme in Cane Car Equipment. The End of a Modern Steel Cane Car

Electric and air tools are used and their use will increase. The list of materials annually purchased for 195 Cuban mills is enormous. The list of additional requirements which will be gradually added by the introduction of labor saving tools and better cane collecting systems will increase this amount.

Doing Business with the Plantation

Mill machinery and supplies come principally from the United States, although Scotch and German machinery is in evidence. Mill supply houses in Havana are numerous, large and very active. Salesmen cover the field regularly and often. Branch agencies of American firms are increasing in numbers and commission houses which handle American specialties are easy to find and are generally well equipped. The introduction of new methods and means for their accomplishment should, after a careful analysis on the ground, be planned by the newcomer, with a view to the careful cooperation with the forces which already exist. Competent Spanish speaking engineers and salesmen who know the country and its people are available and are well able to promote worthy enterprises under their own and outside direction and capital.

In New York City daylight saving is to be resumed next spring, regardless of federal law, according to an ordinance passed unanimously by the Board of Aldermen, and approved by the mayor on October 24. If this ordinance goes into effect the clocks will be set ahead on the last Sunday in March, 1920, and restored on the last Sunday in October, as was done the present year in conformity to the federal law.

How the "Plumb Plan" Will Work

[By L. C. Fritch in "Judge"]

THE FOLLOWING is an illustration of what will take place at a meeting of the board of directors of the Nationalized Railways when the brotherhoods are represented on the board of directors and the employees have ten directors and the public five:

At a meeting of the board of directors of the National Railways of America, January 1, 1925, the following members were present: Representing the public, one; representing the employees, ten.

The following business was transacted: Brother Janis, representing the employees as a whole, moved that a general wage increase of 25 per cent be adopted, effective January 1, 1920, all back pay bearing interest at six per cent compounded semi-annually; and to provide the funds necessary to meet this increase such advances be made in freight and passenger rates as will be required. Resolution adopted: Yeas, 10; Nays, 1.

Brother Smith, representing the trainmen, moved that Brother Barleycorn, who was dismissed on the X. Y. Z. Railway in 1918 for drinking on duty, be reinstated with full seniority rights and full pay from date of dismissal to time of resuming duty and with interest at six per cent compounded semi-annually, and that the officers who disciplined Brother Barleycorn be summarily dismissed from the service and shall not again be employed on the National Railways during their natural life. Carried: Yeas, 10; Nays, 1.

Brother Leasure, representing employees at large, moved that the original plan of the government to buy the railroads for twenty billions of dollars by assessing each of the 100,000,000 people $200; that the $200 assessed to each of the 1,000,000 employees be returned to them and the public other than railway employees be made to pay this amount into the treasury; also that the original plan to divide the surplus equally between the employees and the government be changed, and that the employees hereafter are entitled to all the surplus, as labor alone produces the surplus. Motion carried: Yeas, 10; Nays, 1.

Brother Carr, representing the trainmen, offered a resolution that all freight trains be hereafter limited to twelve cars in order that the number of crews be increased owing to reduction in traffic and in order that this be accomplished that the committee on equipment be instructed to purchase the necessary additional locomotives to accomplish this result. Carried: Yeas, 10; Nays, 1.

Chairman of the Board Rack offered a resolution that hereafter the board of directors meet twice a week, that absent members be paid their fees, and that the fees be increased from $20 to $50 for each meeting of the board.

Brother Straight of the trainmen offered a resolution that each freight train be provided with a Pullman car, including buffet, and that a chef and waiter and porters be provided, and that all equipment and supplies, including food, be purchased by the railways. Carried unanimously, the public director having left the meeting to attend a political meeting.

Brother Jones offered a resolution that special agents be appointed whose duty it shall be to report each case of employees doing anything outside of the specified duty, a second offense to meet with prompt dismissal. Carried.

The board considered the results of operation for the year 1924, which was as follows:

Miles operated	300,000
Gross earnings	$3,000,000,000
Expenses	3,500,000,000
Deficit	500,000,000

A resolution was offered that inasmuch as no surplus was earned and whereas it requires as much effort on the part of the employees to make a deficit as a surplus, that the employees be voted a bonus of ten per cent on the deficit, making the sum of $50,000,000 to be distributed among the employees, and that an increase in freight and passenger rates be made to meet the requirements. Carried: Yeas, 10; Nays, 1.

Seat Tickets in Dining Cars

THE RESERVATION of seats in dining cars, by means of tickets distributed to passengers before the beginning of the meals, has now been the regular practice on the Congressional Limited trains of the Pennsylvania Railroad for a whole year; and the officers of the road express decided satisfaction with the plan, though they do not as yet recommend it for trains which make stops during or near meal times. The Congressional Limited trains run for four or five hours without taking or leaving passengers. The southbound train leaves New York at 3:25 p. m.; Manhattan Transfer, 3:42; Baltimore, 7:30, and arrives in Washington 8:30 p. m. Northbound, the train leaves Washington at 4. p. m., Baltimore 5 p. m., and arrives in New York at 8:10 p. m. The southbound train takes on but few passengers at Baltimore.

The tables are set four times for periods of 45 minutes each—namely, from 5:30 to 6:15; from 6:15 to 7; from 7 to 7:45, and 7:45 to 8:30. A notice describing the arrangement for the dinner service is found by each passenger when he enters the train. All of the cars in the train are parlor cars, and each passenger, therefore, has a numbered seat which is identified by his ticket. Usually there is one dining car on each train. Each of the tables bears a card showing its number.

The steward distributes to passengers the tickets for seats according to their choice, each series of tickets, for each sitting, containing the numbers of six large tables and six small ones, there being four tickets, with the same table number, for each large table, and two tickets with the same table number for each small table. This plan works well, and there has been no attempt to number individual seats in the dining cars.

The car seats 36 persons, and four sittings will accommodate 144; in case of a larger number, when an extra dining car is provided, the extra car serves meals a la carte. The regular cars are manned by one steward, four cooks and six waiters.

The service in these cars is table d'hote, and the tickets for the different sittings are of different color, obviating any possible confusion in seating the passengers. On the southbound train the steward goes through the parlor cars immediately after leaving Manhattan Transfer, and on the northbound after leaving Baltimore; and therefore he has no trouble with the problem of passengers getting on the train after he has made his rounds.

The second period—6:15 to 7—is the most popular one, and all the seats for this sitting are quickly disposed of. The passenger who desires the most convenient hour and fails to get it occasionally enters an objection, but no great difficulty has been experienced. It is obvious that the chances of obtaining a desirable sitting are at least as good as under the a la carte system, which, though it might economize time, in some cases must labor under the disadvantage of crowding at other hours if the train is well filled.

The average length of time occupied by the passengers in eating is 35 minutes, leaving 10 minutes for the resetting of the tables. On one occasion 150 passengers were served by one car in one evening, but this made necessary a fifth sitting, beginning at 8:30 p. m.

Doings of the United States Railroad Administration

Additional Information Issued Regarding Schools for Mechanics and Apprentices

Director General Hines, on November 1, sent the following telegram to Henry J. Allen, governor of Kansas, in reply to one from the governor dated October 25, alleging discrimination in the car supply available to Kansas shippers:

"Referring first to relative loading in Central Western and Southwestern regions, seven weeks ending September 27 do not furnish fair comparison of relative loading in these regions. From July 1 to October 17, the railroads transported from Kansas farms 71,682,000 bushels of wheat, from Oklahoma farms 34,711,000 bushels, and from Texas farms 21,438,000 bushels, as compared with 11,898,000 bushels from Minnesota farms, 26,972,000 bushels from North Dakota farms and 15,120,000 bushels from South Dakota farms. Wheat transported from Kansas, Oklahoma and Texas farms was 73,841,000 bushels in excess of entire movement from Minnesota, North Dakota and South Dakota combined, being more than twice entire movement from these three Northwestern states. During same period wheat transported from Kansas alone was 20,000,000 bushels in excess of entire amount transported from Minnesota, North Dakota and South Dakota. During same period 62 per cent of entire wheat crop was transported from states of Kansas, Oklahoma and Texas as against only 55.8 per cent from Minnesota, North Dakota and South Dakota. Allegations of discrimination by Railroad Administration in favor of Northwest against Southwest, and particularly Kansas, are contrary to facts, and it is hoped that there will be no more of these charges from public officials holding responsible positions. Referring next your statement that daily market reports continue to show that grain receipts at Northwestern terminals are greater than at Kansas City, St. Louis and Chicago combined, thus showing improper distribution of cars, facts are that from October 1 to 29, grain receipts at Chicago, St. Louis and Kansas City amounted to 22,996 carloads as against only 20,985 at Minneapolis and Duluth. Also you have omitted Omaha, St. Joe and other Central Western terminals. Also you have overlooked heavy shipments of wheat from Kansas, Nebraska and Oklahoma to Minneapolis relieving producing sections. Also you have overlooked entirely movements earlier in season when nearly all grain cars were used for loading in Kansas and other Southwestern states. Referring to your statement that Kansas millers cannot ship flour while Minneapolis mills are guaranteeing prompt deliveries, our reports show that on October 25 there were only a few mills closed in Kansas while during last week no loading of box cars with either grain or flour was permitted for two days at Twin Cities. Referring your statement that there are now in Kansas warehouses more than one million barrels flour sold but which cannot move, official records of United States Grain Corporation show that on October 17 there were only 300,000 barrels of flour and food products in stock at Kansas mills. Referring your statement as to capacity Kansas mills, records of United States Grain Corporation show a present daily grinding of somewhat less than 300,000 bushels. Referring your statement concerning car shortage for cement and other industries in Kansas, shortage in Kansas is no greater relatively than in other states. Supply of preferential cars for loading grain, grain products and sugar in Kansas and elsewhere has necessarily diminished available supply for other commodities. Your suggestion that Kansas situation is not understood by Railroad Administration is without foundation in fact. Situation is fully understood and Kansas will continue to receive just and impartial treatment. Referring instructions issued result of Chicago conference, you will understand that it takes a little time to make such instructions fully effective. All available cars suitable for grain, grain products and sugar are now being so applied and regional directors advise me that with movement of empties now tided west prospects are favorable for progressive improvement in Kansas loading. As advised in my telegram of October 18 to you, individual instances requiring relief should be drawn to attention of superintendents of transportation named in my telegram."

Vocational Education for Mechanics and Apprentices in Railroad Shops

For the guidance of railroads contemplating the establishment of schools and classes for training of mechanics and apprentices under provisions of the federal vocational education act and the Division of Operation circular of August 1, 1919, the following additional information on the matter is submitted in a circular issued by Frank McManamy, assistant director of the division:

The federal vocational education act provides that schools organized under its provisions shall be conducted by the particular state in which the school or class may be located, and under the general direction of the state board for vocational education.

In establishing such schools and classes under the authority of Division of Operation circular, August 1, 1919, railroads in federal operation will co-operate with the state board for vocational education.

It is expressly stated in the vocational education act that the controlling purpose of the work to be aided under its provisions is to fit for useful employment those who are preparing for a trade or industrial pursuit or who have entered upon the work of a trade or industrial pursuit.

Since the state director for vocational education is informed on all provisions of the federal law, as well as the state plans under which the schools will be operated, such arrangements as may be necessary for installing this system of training in any railroad shop should be made by the railroad with that official, and in conducting a school at any point the railroads should designate some local officer at that particular place to cooperate with the local superintendent of schools.

A list of the names and addresses of the state directors for vocational education is appended.

The purpose for which federal money has been appropriated and may be expended by the state and under what conditions the state may allot such funds is determined in general by the provisions of the law, all details of which will be furnished the railroads upon application to the state board for vocational education.

The general conditions set up in the act are as follows:

1. The school or class must be under public supervision or control.
2. The controlling purpose must be to prepare for useful employment.
3. The instruction must be of less than college grade.
4. All pupils must be over 14 years of age.
5. To meet the requirements of the vocational education act, the instruction must be given for not less than 144 hours

per year. The United States Railroad Administration authorization for 208 hours of instruction per year meets this condition.

6. Every dollar of federal funds must be matched by a dollar of state or local money, or both. The expenditures are to be made by the state board direct or by the local community, and reimbursement made from federal funds by the state board for vocational education.

7. Reimburesement may be made from federal funds only for money expended for salaries of teachers. This does not include any reimbursement for buildings, equipment, or supplies.

8. The railroad must supply the plant and equipment adequate for the type of instruction to be given. This has already been authorized by the Railroad Administration in circular August 1, 1919.

9. The course of study may include trade drawing, trade science, trade mathematics, and actual shop work. In all cases the instruction given shall be of the trade-extension type, supplementing in character the regular employment of the pupil.

10. The methods of instruction must be such as will insure the functioning of that instruction in the trade which the apprentice is learning. This means that the instruction should be given as far as possible by the individual method rather than through lectures. Demonstrations, illustrations, and examples should be drawn from the shop in which the pupil is employed. A careful coordination must be maintained between the instructor responsible for the related instruction in the classroom and the training which the apprentice is receiving in the shop.

11. All instructors for whose work reimbursement is to be made through the state board for vocational education must be thoroughly qualified and meet the qualifications set up by the state plan in the state in which the work is to be given. The instructor of related subjects should be a man possessing at least two years' technical education of college grade, or equivalent technical education, and having a satisfactory practical expereince and contact in one or more of the trades represented in the railroad shop—a contact sufficient of giving an appreciation and working knowledge of the principal trade processes. It is recognized that whenever a man can be found possessing, in addition to the technical training, a journeyman's experience in a trade, he is more likely to be successful as an instructor.

The Federal Board for Vocational Education, in cooperation with the United States Railroad Administration, will prepare suggested courses of study for at least three trades, namely, machine shop, boiler making, and sheet-metal work, and these suggested courses of study will be placed at the disposal of the various state boards, and through these boards can be obtained by the railroads upon application.

There are certain condidtions which should be considered in making arrangements for railroad shop apprentices' schools under this plan:

1. There should be an advisory committee. Such committee may properly include representatives of the workers in the trades, the shop management, and public school.

2. This advisory committee should be responsible for insuring cooperation between the workers, shop management and public-school authorities.

3. The instructors employed for this work should be satisfactory to the advisory committee, as well as meeting the qualifications set up in the state plans.

4. The courses of study should be satisfactory to this advisory committee.

5. The classrooms to be used should be suitably fitted up for the instruction which is to be given, and they should be so located that the apprentices may readily have access from the shop to the classroom and the classroom to the shop without the necessity of making an entire change of clothing or entailing an unnecessary loss of time.

It is understood that railroads may conduct their own schools independent of these arrangements with the Federal Board for Vocational Education, but in such cases the entire expense will be borne by the railroad, and no reimbursement can be made from federal funds under provisions of the federal vocational education act.

Instructions Covering the Apportionment of Revenues from Interline Passenger Traffic

1. Effective December 1, 1919, the provisions of General Order No. 20, in so far as they relate to passenger accounts, are hereby canceled.

2. Effective with the business on and after December 1, 1919, General Order No. 32, and Accounting Circulars Nos. 12, 12-A and 106, are hereby canceled. On and after the date all bases and practices in effect December 31, 1917, as published in the Official Digest of Passenger Fares and Divisions, circulars issued by the various territorial passenger associations division circulars issued by individual carriers in effect December 31, 1917, and the recommendations of the Railway Accounting Officers Association as published in 1917 Synopsis, and as subsequently amended, shall govern the division and apportionment of interline passenger revenue, excess baggage collections and other analogous revenues derived from the interline passenger service, between roads under federal control.

3. The preparation of division slips on a revenue basis shall be started at once, in order to facilitate the work of making apportionments for the month of December, 1919, and to permit reports to carriers to be rendered not later than the last day of the succeeding month.

4. Adjustments made in the accounts for December, 1919, and subsequent months, covering tickets sold prior to December, 1919, and settled on "passengers carried one mile" basis, shall be made by applying the average revenue per passenger per mile that was used by the issuing carrier in the apportionment of interline ticket sales made during November, 1919.

5. Adjustments made in the accounts for December, 1919, and subsequent months, on account of excess baggage collections prior to December, 1919, that were apportioned on a mileage basis, shall be made by applying the average revenue per mile that was used by the issuing carrier in the apportionment of interline excess baggage collections for November, 1919.

6. In rendering reports of interline passenger traffic, carriers shall use the forms prescribed by the Railway Accounting Officers Association, as published in 1917 Synopsis, and as subsequently amended.

7. Claims shall not be rendered nor adjustments made for errors developed in interline passenger traffic reports for the period of federal control, but errors shall be brought to the attention of the initial carrier. Tracers for unreported tickets shall be rendered and adjusted, and revenues allocated by each carrier in accordance with the practice in effect at the beginning of federal control.

8. Effective December 1, 1919, General Order No. 49 and Accounting Circulars Nos. 42 and 43 are hereby conceled. The use of the forms and the application of the methods set forth therein are, however, left to the discretion of the individual carrier except that the present uniform forms and methods shall be continued at the consolidated ticket offices and union stations.

Contracts Executed

The Railroad Administration has executed compensation contracts with the Susquehanna & New York for $56,884, the Morgantown & Kingwood for $51,362, and the Maryland, Delaware & Virginia for $49,543.

Interstate Commerce Commission's Annual Report

Organization Had a Busy Year in Spite of Reduced Authority —Recommendations Presented to Congress

THE THIRTY-THIRD ANNUAL REPORT of the Interstate Commerce Commission to Congress, covering the year ending October 31, 1918, contains little in the way of new recommendations for the future because its views have been so fully expressed before the Congressional committees engaged on the proposed railroad legislation.

The routine report of the activities of the commissioners and the various bureaus shows, however, that the commission has been fully occupied in spite of the fact that its authority has been somewhat curtailed by federal operation of the railroads.

The commission's recommendations are summarized in the report as follows:

Summary of Recommendations

1. That consideration be given to our recommendation in the 1916 annual report that the power to award reparation be placed wholly in the courts; that a condition precedent to an award of reparation by a court for unreasonable rates or charges be that we have found such rates or charges unreasonable as of a particular time; that the law affirmatively recognize that private damages do not necessarily follow a violation of the act; that provision be made that sections 8, 9, and 16 of the act to regulate commerce shall be construed to mean that no person is entitled to reparation except to the extent that he shows he has suffered damage; and that the law should provide that if a rate is found to be unreasonable the rule of damages laid down in the *International Coal Case,* 230 U. S., 184, should control.

2. That section 20 of the act be amended to provide that its terms shall be applicable to holding companies.

3. We renew the recommendations made in previous reports favoring the standardization of railroad operating rules.

In connection with the subject of reparation, the commission refers to its previous report, in which it said it should be borne in mind that the standard of reasonableness under the commerce act is not a definite fixed standard, and whether a certain rate is reasonable or not often cannot be known by the carrier until the commission has passed upon it. The report refers to the fact that the shipper claiming reparation has frequently in fact passed the unreasonable charge along to the consumer in the price of his goods. The commission discusses the decision of the Supreme Court in the Darnell-Taenzer case, in which the defendant carrier offered this fact as a defense, in which the court said that the plaintiffs suffered loss to the amount of the verdict when they paid the freight rate. Their claim accrued at once in the theory of the law, and it does not inquire into later events. The commission says the law might well affirmatively recognize that private damages did not necessarily follow a violation of the act, and provide that sections 8, 9 and 16 shall be construed to mean that no person is entitled to reparation except to the extent that he shows that he has suffered damage. Incidentally, it says, the law now permits carriers to retain certain unreasonable charges in excess where rates are found to be unreasonable, and reparation is awarded only to the parties claiming it within the statutory period, and an unreasonable rate under existing conditions is in the last analysis a matter of judgment and in legal sense not generally an extortion.

As to the extension of the act to make it applicable to holding companies, the commission says that in the investigation of the affairs of operating railroad companies its work has been obstructed by reason of the fact that desired information concerning the carrier under investigation was obtainable only from the records of a holding company, which questions its authority to inspect its records and accounts. The information thus sought usually has to do with the financial status of operating accounts and their relationships to other carriers—matters of manifest concern to the public and important in the performance of their regulatory duties.

An abstract of the report is as follows:

Abstract of Report

Shortly after the armistice the Committee on Interstate Commerce of the United States Senate requested us to designate one of our members to present at the hearings of the committee "available data and other information bearing on the railroad situation in the country." Commissioner Clark, the senior member of the commission and chairman of its legislative committee, was designated as such representative. After consideration in conference the commission authorized him to present to the Senate committee statements embodying the prevailing views of the members of the commission and outlining generally the legislative program to which as a body we gave our support; and, second, the somewhat divergent views of Commissioner Woolley.

Commissioner Eastman did not become a member of the commission until February 17, 1919, and was therefore not a participant in the deliberations which led to the adoption of the program so submitted. Under date of July 8, 1919, Commissioner Eastman issued an individual statement. The formal statements were supplemented by extensive oral testimony and statistical date.

Subsequently the Committee on Interstate and Foreign Commerce of the House of Representatives made a similar request, in response to which much additional testimony was submitted and numerous illustrative and explanatory statements compiled.

As stated in our last report the service section created by the director general supplanted the carriers' commission on car service and took over its organization and personnel as well as a part of our Bureau of Car Service, thus in effect continuing the arrangement which then existed for handling car service and transportation generally. This method of operation has continued. The experience had under federal control has demonstrated the public benefits which can be derived from unified direction of car service and emphasizes the necessity for expanded power in the commission in order that those benefits may be continued and, where practicable, enhanced after operation of the railroads is resumed by their respective owners.

Certification of the Standard Return

Last year we certified to the President the average annual railway operating income of 282 carriers. During the current year we certified the average annual railway operating income of 285 carriers. After reviewing the accounts of 117 carriers we found that some of the reported figures should be corrected to harmonize with our accounting rules, and that 27 corrected certifications should be made to the President. Ninety of the original certifications were based upon accounts and computations which required no corrections. Additional

corrected certifications will be made where warranted by the further examinations now being conducted.

Boards of Referees

Under the provisions of section 3 of the federal control act and in response to petitions filed by railroad corporations, we have appointed eight boards of referees, and upon a petition filed by the director general we have appointed one such board, to hear claims for just compensation not adjusted by agreement upon a contract, as is contemplated in section 1 of the federal control act. These boards have proceeded promptly with a view to reporting, as soon as practicable in each case, to the President the just compensation. One of these cases has been concluded, and in four of them the evidence has been presented and briefs are soon to be filed.

Consolidated Classification

In our thirty-second annual report we advised that we had continued to endeavor to stimulate uniformity in freight classification. We stated that we had inquired of the carriers as to why they could not by January 1, 1919, or earlier, effect an assimilation or consolidation of the three general freight classifications into one volume containing one set of uniform rules and regulations and with three rating columns, one for each territory; that this was followed by the appointment by the director general of a small committee, of which our classification agent was a member, to take up and finish the work delegated in September, 1908, to the carriers' committee on uniform classification; that the special committee duly submitted such a volume and that request was made upon us by the director general to make an investigation and submit our recommendations to him.

The hearings were concluded shortly after our report was submitted, some 15,000 pages of testimony having been taken and 800 exhibits filed. Our report and recommendation was submitted to the director general on September 22, 1919, 54 I. C. C., 1. All of the carriers subject to the act and which were not under federal control were made respondents in order that the same classification might, if that course were found advisable, be prescribed for their use also.

The consolidated classification was not proposed as, and is not, a uniform classification in the generally accepted sense of the term. It would preserve the identity of the official, southern and western classifications. In consolidating the classifications and unifying the rules and descriptions numerous concessions were made and some long-standing and deep-rooted controversies growing out of territorial

Nature of changes	Number of changes in the classification			
	Official	Southern	Western	Total
Increase in ratings	890	2,574	393	3,857
Reduction in ratings	478	898	464	1,840
Carload ratings eliminated*	136	1	4	141
Increases in minimum weights	342	599	194	1,135
Reductions in minimum weights	229	73	61	363
Carload minimum weights to which rule 34 is added, subjecting them to the graduate scale	39	49	132	220
Additions or new items	1,144	1,665	425	3,234
Total	3,258	5,859	1,673	10,790

*The number of carload ratings established does not appear, but they are included in the reductions.

or local traffic policies were cast aside. Some radical changes were necessary in order to accomplish the desired uniformity as to rules and descriptions. There was no concerted effort to make the ratings uniform, but uniformity seems to have been kept in mind. The special committee was not directed to change ratings that were not necessarily or reasonably incident to changes in descriptions, and most of the increases and reductions in ratings proposed by the classification chairmen had no necesary connection with the work assigned to the special committee. Our representative thereon had no voice in assigning the ratings. Changes proposed for the purpose of attaining a greater degree of uniformity had more of an upward than a downward trend. While some of the proposed changes had been discussed with the public, the great majority of changes were laid before the public in the consolidated volume for the first time. The following table will give some idea of the magnitude and scope of the general revision put forward by the carriers:

An increase of more than one class in the rating effects an increase in the average charges ranging from 15 to 25 per cent. Many reductions were proposed, but it happens that, upon the whole, they would not apply to traffic of the same importance as would the increases. The director general did not intend the consolidated classificaiton as a revenue measure, and the classification committeemen disclaimed any purpose on their part to make it such. The record showed that, in the main, the proposed increases reflected conscientious efforts to bring about a proper relationship of ratings and to fairly distribute the transportation expenses over the various articles of traffic. Generally speaking, the consolidated classification, as proposed by the carriers, would bring them more revenue. So far as western classification territory is concerned, most of the increases proposed were of minor importance and comparatively few of them were protested, but in the two other territories some of the increases would apply on important kinds of traffic, and were the subjects of vigorous protest. The uniform rules, descriptions and estimated minimum weights were generally recognized as desirable and were received with favor. Objections were voiced mainly to increased ratings and to a general rule relating to charges on mixed carload shipments.

An absolute uniform classification could be prepared and proposed only in connection with a uniform system of rate scales having a uniform number of classes. Until that is worked out, however, there is no real bar to complete uniformity except in so far as carload freight in the lower classes is concerned. The percentage relationships between the classes are not uniform, even within any one of the three classification territories, nor among the tariffs of the same system of railroads, or even for different distances in the same tariff. This should not be a bar, however, to partial uniformity.

A study of the changes in ratings proposed disclosed inconsistencies which we could not endorse. We, therefore, had a comprehensive analysis made to ascertain whether or not we could properly recommend, with modifications, the somewhat general revision of ratings proposed, or an amplification of those proposals. We found that we could not properly recommend either, for the reason that many and important changes as to which interested shippers had had no notice or opportunity to be heard would be included.

So far as general rules, commodity descriptions, packing specifications and estimated and carload minimum weights are concerned, and subject to the modifications thereof indicated in our report, we recommended the adoption of the consolidated classification for application in lieu of the present official, southern and western classifications by carriers under federal control. With but two or three exceptions we did not recommend changed ratings, except as the establishment of new items indirectly effected changes and such as may be a reasonably necessary part of the establishment of uniform descriptions, specifications or minimum and estimated weights. The same rules, descriptions, packing specifications and minimum and estimated weights, subject to the same modifications and limitations, were, tentatively, and without prejudice, found just and reasonable for carriers not under federal control. We also tentatively sug-

gested a 10-class classification for the entire country and uniform percentage relationships among the classes in the class-rate scales throughout the country.

The director general has instructed the territorial classification committees to prepare a consolidated classification conforming to our recommendations, and it is expected that such an issue will be filed at an early date. The proposed classification is the result of effort toward uniformity extending over a long term of years, and since uniform rules and descriptions are necessary before uniformity in ratings is possible it marks an important step toward a uniform classification.

In connection with the consolidated classification, the director general requested that we hear evidence as to the effect of cancelling various state classifications and substituting therefor the consolidated classification. This request was not made until the hearings as to the latter were well advanced and no order was made broadening the scope of the hearings. Generally speaking, the states of Alabama, Florida, Georgia, Illinois, Iowa, Mississippi, Nebraska, North Carolina and Virginia have their own classifications. Evidence was accordingly received on this subject. Our conclusion was that while ordinarily there could be not justification for a different rating on an article when transported wholly within a state than when moved into or out of the state or between states in the same general territory, equality between intrastate and interstate ratings should not be accomplished by such substantial increases on important articles of traffic as would result if the proposed consolidated classification were substituted for the state classifications. We expressed the view that the respective situations should be worked out carefully and gradually after full investigation and co-operation with the interested shippers and state commissions with a view to not depriving any commodity or community of fair and reasonable rates and that, therefore, we could not recommend the substitution of the proposed consolidated classification for the state classifications. The question of the elimination of the Illinois classification was pending before us at the close of the period.

The question of eliminating exceptions to the territorial classifications was not referred to us by the director general.

Formal Docket

The formal complaints filed numbered 838, of which 695 were original complaints, and 143 subnumbers, which may be compared with 342 original complaints and 114 subnumber complaints filed during the previous period. We decided 458 cases and 140 have been dismissed by stipulation, or on complainant's request, making a total of 598 disposed of, as againt 653 during the previous year.

We conducted 839 hearings and took approximately 106,591 pages of testimony, as compared with 596 hearings and 104,983 pages of testimony during the preceding year.

Subjoined is a statement which shows certain facts as to the condition of our docket upon November 1, 1917, 1918 and 1919:

	1917	1918	1919
Cases at issue, but not set for hearing	185	21	54
Cases set for hearing, but not heard	111	142	184
Cases heard, but not fully submitted	110	87	234
Cases submitted	643	386	274
Total cases pending	1,217	768	860

Applications to Increase Rates Under the Amended Fifteenth Section

The total number of these applications filed since the amendment of August 9, 1917, is 8,439; number pending October 31, 1918, 1,237. During the year 1,755 applications have been filed; 1,041 have been approved; 37 have been denied in full, and 68 denied in part; 1,024 have been withdrawn by the applicant carriers; 8 have been assigned to dockets for formal hearings, and 814 are now pending.

The amendment of August 9, 1917, to section 15 of the act, expires by limitation January 1, 1920.

Investigation and Suspension Docket

No proceedings were instituted on this docket. We declined to suspend protested schedules in 10 instances, and disposed of 8 proceedings previously instituted.

Express Companies

After hearing upon application of the express companies for a 10 per cent increase in their interstate rates, we authorized such increase on June 17, 1918. Proposed Increase in Express Rates, 50 I. C. C., 385. These rates were made effective July 15, 1918.

On November 16, 1918, the President took possession, control and operation of the American Railway Express Company and placed it under the charge of the director general of railroads.

Effective January 1, 1919, by his general order No. 56, the director general adopted the block system of stating express rates in the three states which had not theretofore adopted that system and increased the express rates generally about 8 per cent.

During the period covered by this report schedules of rates substantially in accordance with the block system applicable to less than carload shipments of fruits and vegetables produced in 10 of the southern states have been established interstate, and similar schedules were also established on intrastate shipments in several of the states. Schedules of interstate carload rates on these commodities are still under consideration by the express company.

The director general has filed with us, to become effective December 10, 1919, regulations governing the packing of property shipped by express. These regulations contemplate better protection to the property transported and consequent reduction in loss and damage claims.

Numerous informal complaints have been received because of delays in payment of claims for loss of, damage to, or delays in the transportation of property by express. These have been taken up with the several companies and in general disposed of. The Adams Express Company, not now engaged in the transportation of property, has in some instances failed to give claimants definite response within two years after delivery of the property or after a reasonable time for delivery has elapsed, and has refused to pay claims when suits were not brought within the period of two years and one day after delivery, as was stipulated in the contract of shipment. In some instances it has offered to adjust the claim by payment of 60 per cent of the amount claimed, explaining that if that offer were not acceptable investigation would be continued and the claim disposed of on its merits. While the several companies were merged under a contract with the director general, apparently on provision was made for the assumption by the American Railway Express Company of claims against the constituent express companies the cause of action in which accrued prior to the creation of the consolidated company.

The Fourth Section

The operation of the transportation systems of the country by the director general of railroads has had a marked effect upon the applications for relief from the requirements of the fourth section of the act to regulate commerce. The director general has, in important instances, declined to defend carriers' applications for relief under the fourth section, but requested relief in a few instances. The applications filed have been in the main on behalf of carriers not under fed eral control, and as these carriers form in the aggregate but a small part of the transportation system of the country, and

have comparatively few situations where such relief is necessary, the number of applications has been less than in previous years.

The number of applications received for relief from the provisions of the fourth section was 51, a decrease of 214. The number of fourth-section orders entered was 182, of which 127 were permanent in character and 55 for temporary relief. Of the orders entered, 122 were in response to applications included among the original 5,030 applications for authority to continue then existing fourth-section departures, and 60 were in response to applications filed subsequently. Applications withdrawn after correspondence with carriers numbered 23. Orders granting relief in whole or in part total 82; orders denying relief in whole or in part numbered 124. Applications were assigned in whole or in part for hearing in connection with other proceedings in 157 instances.

Rate Schedules

There were filed 95,961 tariff publications containing changes in freight, express and pipe-line rates, passenger fares and classification ratings. These figures indicate a decrease in the number of rate changes established during the period, but this period followed the general increases in rates and fares ordered by the director general of railroads, and most of the changes in these publications were made to restore relationships between points and commodities which were disturbed by the percentage increases.

The file of schedules which is maintained for the use of the public, including shippers, carriers and departments of the government, has been used to the limit of its capacity, and, in addition, the Bureau of Tariffs has continued to furnish rate information to shippers, to the Railroad Administration and to other departments and bureaus of the government in constantly increasing volume.

Bureau of Inquiry

Twenty-eight indictments were returned for violations of the act to regulate commerce and the Elkins act. Three of these were against carriers or carriers' agents and 25 against shippers, passengers or other non-carriers. During the year 65 cases were concluded. Pleas of guilty were offered by the defendants in 57 of these cases and a plea of nolo contendere in 1. A verdict of not guilty was rendered in 1 case and indictments were dismissed in 6 upon motion of the government.

Several prosecutions have been instituted against shippers who filed with carriers false claims for alleged loss and damage to shipments in transit, in violation of section 10 of the act to regulate commerce, and thereby obtained payments from the carriers of substantial offsets against the transportation charges paid by such shippers, a discrimination against honest shippers who did not engage in such fraudulent practices. The obtaining of money from carriers under federal control by means of such false claims is practically equivalent to the obtaining of money from the Treasury of the United States by the presentation of false claims against the government.

In our last annual report reference was made to prosecutions under the Elkins act undertaken against dealers who had obtained the transportation of lumber into embargoed districts by using, without authorization, the names of government officials upon the billing for such shipments with intent to show that the lumber was intended for the use of the government when in fact intended for private purposes. Most of these prosecutions have been concluded successfully. A few still await trial.

Bureau of Law

On October 31, 1918, there were 16 cases involving orders or requirements of the Commission pending in the courts, of which 5 have been concluded. During the year 3 cases were instituted, so there are now pending in the different courts 14 cases. Of these 3 are in the Supreme Court and 11 in district courts. Of the 5 cases finally disposed of 2 were dismissed on motion of the petitioner, 2 were dismissed on motion of the parties and 1 was concluded by a decision of the Supreme Court.

Bureau of Statistics

The work of making the computations underlying the certificates of average annual railway operating income has been practically completed. The following table gives a survey of the number of steam roads of each class for which such computations were made, and the amount of the income involved. It is perhaps needless to say that the amounts here shown will not be exactly the aggregate of the amounts for which contracts are signed nor necessarily the ultimate amount payable to those classes of roads when all corrections and adjustments are made:

SUMMARY OF COMPUTATIONS OF AVERAGE ANNUAL RAILWAY OPERATING INCOME, AS DEFINED IN THE FEDERAL CONTROL ACT, FOR THE THREE YEARS ENDED JUNE 30, 1917

Item	Number of roads	Amount of income
Class I companies under Federal control	[1]163	$887,650,248.12
Class II companies under Federal control	03	8,671,996.48
Class III companies under Federal control	[2]35	379,387.46
Switching and terminal companies under Federal control	[3]124	22,014,303.34
Total	415	918,715,935.40
Class I companies not under Federal control	[3]11	4,624,908.25
Class II companies not under Federal control	[4]122	8,097,419.00
Class III companies not under Federal control	[5]223	2,365,702.99
Switching and terminal companies not under Federal control	[6]48	3,331,200.21
Total	404	18,419,230.45
DEFICITS NOT INCLUDED IN ABOVE		
Class I companies under Federal control	4	653,814.22
Class II companies under Federal control	27	1,195,815.35
Class III companies under Federal control	25	347,770.97
Switching and terminal companies under Federal control	8	76,723.95
Total	64	2,274,124.49
Class I companies not under Federal control	0	.....
Class II companies not under Federal control	[7]21	643,082.74
Class III companies not under Federal control	[8]144	973,879.36
Switching and terminal companies not under Federal control	37	636,713.57
Total	202	2,253,675.67
The net railway operating income with deficits deducted would be:		
Roads under Federal control	...	916,441,811.00
Roads not under Federal control	...	16,165,555.00

[1]Excludes Cincinnati, Hamilton & Dayton Railway Company not certified.
[2]Excludes two companies not certified.
[3]Excludes Utah Railway Company not certified.
[4]Includes 28 companies operated under co-operative contract.
[5]Includes 37 companies operated under co-operative contract, and excludes 53 companies not certified.
[6]Includes 1 company operated under co-operative contract, and excludes 1 company not certified.
[7]Includes 3 companies operated under co-operative contract.
[8]Includes 18 companies operated under co-operative contract.

The federal operation of the roads has necessitated a change in the annual report form of steam roads. Two reports have been required for 1918 for each controlled road, the one returned by the federal auditor and covering the revenues, expenses and operating statistics of the road, and the other returned by the corporate auditor and covering the financial transactions of the corporation. Owing to the numerous new accounting questions which have been raised by federal control, carriers have again been unable to comply with our rule that annual reports must be rendered within three months after the close of the reporting year. Our statistics for the calendar year 1918 will for this reason be much delayed.

The attempt of the Railroad Administration to inaugurate a more elaborate method of reporting statistics of the various classes of commodities received our approval. General Order 59, issued by the director general, contemplated the re-

porting of the commodities carried in such a way as to show not only the number of tons carried but also the freight revenue for each class of traffic, and further to show the number of tons of each class carried from any one state to each other state. This order was, however, rescinded. A new attempt is being made to work out a practicable improvement in this kind of statistics.

Bureau of Carriers' Accounts

The activities of this bureau have been directed chiefly to the execution of duties imposed upon us by the provision of the federal control act, which requires that as a basis for compensation of railroad owners we shall determine and certify the average annual railway operating income for the three years ended June 30, 1917. As the work has been prosecuted without additional force it has been necessary temporarily to defer the broader investigations of accounts usually conducted by this bureau. The review has nevertheless resulted in substantial benefits through the discovery and correction of erroneous practices in connection with the important accounts involved, as well as material changes in the amounts reported by the carriers as their operating income, which was the immediate subject of inquiry.

Of approximately 560 carriers whose accounts it became necessary to examine for the purpose of verifying the average annual operating income as reported by them, there have been submitted by the field force of the bureau reports of 387 examinations, leaving 173 examinations yet to be made, of which 33 are now in progress.

Bureau of Correspondence and Claims

The number of informal complaints received was 4,450, a decrease of 1,008. Carriers filed 1,885 special docket applications for authority to refund amounts collected under the published rates admitted by them to have been unreasonable, a decrease of 876. Orders authorizing refund were entered in 1,755 cases, a decrease of 997, and reparation was awarded thereon in amounts aggregating $420,867.77. In addition, 648 cases were dismissed or otherwise disposed of without orders. The bureau also handled approximately 48,000 letters, many of which, while not classified as complaints, had the characteristics of complaints.

Bureau of Safety

The casualties on steam railroads in connection with the operation of trains during the calendar year 1918 are summarized as follows:

Class of persons	Number of persons	
	Killed	Injured
Trespassers	3,255	2,805
Employees	2,928	47,556
Passengers	471	7,316
Persons carried under contract, such as mail clerks, Pullman conductors, etc.	48	766
Other nontrespassers	1,995	5,701
Total of above classes	8,697	64,144

In addition, there were 589 persons killed and 110,431 injured in nontrain accidents during the year.

During 1918 there were 164 employees killed and 2,332 injured in coupling and uncoupling cars; casualties due to employees coming into contact with overhead and side obstructions, falling from and getting on and off cars, resulted in 630 deaths and 14,533 injuries. As compared with the figures for 1917, there was a decrease of 2 in the number killed and 176 in the number injured in the former class of accidents, and an increase of 39 in the number killed and a decrease of 1,851 in the number injured in the latter class of accidents.

During the year information of violations of safety-appliance laws by railroads operated under federal control was not filed with United States district attorneys for prosecution, but reports of such violations were furnished to the United States Railroad Administration to enable it to take corrective measures as contemplated by Order No. 8 of the director general. Reports of 1,569 specific instances of violations of the law were transmitted to the director general.

In connection with the consolidation and unification of terminal facilities effected by the Railroad Administration, investigations conducted by us have disclosed that in some instances proper inspection was not being given equipment in such terminals and available repair facilities were not being sufficiently utilized to insure that cars having safety-appliance defects would not be moved in violation of law. Several cases of this character were called to the attention of the director general, and in each case corrective measures were taken to secure compliance with the requirements of law.

Investigations have disclosed that situations exist on several railroads where trains are still controlled on mountain grades by means of hand brakes. Measures are being taken by us to bring about the discontinuance of this practice and to secure full compliance with the law. In some cases, joint investigations and demonstrations have been conducted for the purpose of fully establishing the practicability and safety of operating practices which conform to the requirements of the law.

The results of safety-appliance inspections also direct attention to the fact that improvement in the condition of air-brake equipment is required. Our order of June 6, 1910, specifies that not less than 85 per cent of the cars in a train must have their brakes used and operated by the engineer of the locomotive drawing the train, and this requirement is generally understood and recognized. The order also provides that "all power-brake cars in every such train which are associated together with the 85 per cent shall have their brakes so used and operated." This latter requirement is not generally observed. It is common practice at the present time for trains to leave terminals having some cars with inoperative brakes or having brakes cut out, notwithstanding the fact that facilities are available at such terminals for making repairs or replacements necessary to place all power-brake equipment in operative condition.

The period within which carriers subject to the safety-appliance laws were required to equip their cars to comply with the standards fixed by our order of March 13, 1911, was, as to paragraphs *b*, *c*, *e* and *f* of the order, extended on February 1, 1918, to September 1, 1919. On August 15, 1919, application was made to us by the United States Railroad Administration, and by the American Railroad Association for an additional extension of nine months. At the hearing it was shown that there remained yet unequipped about 80,000 cars, 16,596 of which would require reconstruction of the ends in order to provide sufficient end ladder clearance. It was also shown that on account of difficulty in obtaining men and material, in locating nonequipped cars and getting them unloaded and to repair tracks, it would be necessary to grant additional time within which to equip them, or it would be necessary to take from service cars otherwise suitable for use and needed particularly for transportation of coal and grain. In view of this showing, on August 29, 1919, an order was issued granting a further extension of time until March 1, 1920.

With respect to railroads which are not operated under federal control, there were, during the fiscal year, 15 cases of violations of the safety-appliance law, involving 73 counts, transmitted to United States district attorneys for prosecution. Cases aggregating 57 counts were tried, of which 49 counts were decided in favor of and 8 counts adversely to the government.

During the fiscal year there were transmitted to the several United States district attorneys for prosecution 10 cases of violation of the hours-of-service act, involving 61 counts.

Cases aggregating 21 counts were tried, of which 2 counts are pending decision, 2 counts were decided in favor of, and 17 adversely to, the government. Of these 17 counts, 16 have been appealed. There were also 42 counts decided against the government on demurrers to defendants' answers. There were 461 counts confessed and 46 counts dismissed. In the various circuit courts of appeals there were decisions in 3 cases involving 23 counts, all in favor of the government. In 2 cases decided by the Supreme Court involving 29 counts, the decisions were in favor of the government; application for a writ of certiorari was denied in two cases which were consolidated and tried as one case, involving 120 counts, wherein the decision of the circuit court of appeals was favorable to the government. Pending trial in the various district courts are 71 cases involving 651 counts.

Reports of 225 instances of violations of the law were transmitted to the director general. Of the cases filed for prosecution in the district courts, 4 were instituted against the officers and agents in charge of the employees who exceeded the statutory periods of service, involving 18 counts. These officials were employed by four railroads which are operated under federal control.

During the year ended June 30, 1919, we investigated 79 train accidents. These included 53 collisions, 25 derailments, and one miscellaneous accident. The collisions resulted in 261 deaths and 1,083 injuries, the derailments resulted in 55 deaths and 231 injuries, while the one other accident resulted in 20 deaths and 19 injuries, a total of 336 persons killed and 1,333 persons injured.

Of the 53 collisions investigated, 28 occurred on lines operated by some form of block signal system, 19 on lines operated by time table and train order; 6 were yard accidents.

Of the 28 collisions occurring on block signal roads, 18 occurred in automatic block signal territory, of which 12 were rear-end collisions, 5 were head-end collisions, and 1 was a side collision.

Eleven of the accidents occurring in automatic block signal territory were due, directly or in part, to the failure of enginemen properly to observe and obey signal indications; in some cases improper performance of duty by flagmen was a contributing cause. In one of the rear-end collisions the primary cause was the failure of a crew to wait a sufficient time after opening a side-track switch before passing out upon the main line. Two of the collisions investigated were caused by lack of proper maintenance of signals In one of these cases a false clear signal was the primary cause of the accident, while in the other, which occurred on an interurban line, orders had been issued by the dispatcher for train crews to disregard automatic block signals, several of which were not in operative condition and had been out of order for some time. The crews of the trains involved in this accident overlooked a meeting point which was fixed by time table as well as by a train order.

Of the 10 collisions which occurred in nonautomatic block signal territory, 4 were rear-end and 6 were head-end collisions. One was due to improper flagging. In 4 collisions train orders were involved. In one case the engineman failed to stop and take siding as directed; in another case a train crew failed to obey a wait order; in the third case an operator made an error in copying a train order, and the crew accepted the order, which was incomplete and also contained an erasure and an alteration; and in the other case the operator failed to deliver an order. Two accidents were due to enginemen not operating their trains under proper control in occupied blocks, as required by signal indications; another was due to the failure of an engineman to observe and obey the stop signals of a flagman, another to a runaway due to cars being left on a grade without sufficient number of hand brakes being set, while another was due to a work train occupying the main track without protection.

The 6 yard accidents investigated consisted of 1 rear-end collision, 4 head-end collisions, and 1 side collision. The most serious of these was a head-end collision between a light engine moving away from a roundhouse, and a heavily loaded employees' train. It occurred in a dense fog and was the result of both enginemen failing to take proper precautions in view of the prevailing weather conditions.

The 19 collisions on lines operated by the timetable and train-order system consisted of 5 rear-end collisions, 12 head-end collisions, and 2 side collisions. All of the rear-end and side collisions were due to failure properly to protect trains by flag. Errors in transmitting, receiving and fulfilling train orders were responsible for 5 of the 12 head-end collisions. Of the remaining 7 head-end collisions, 5 were due to trains occupying the main track on the time of superior trains, 1 to running by meeting point on account of excessive speed, and the other to the failure of a dispatcher to provide a meeting point between 2 extra trains. Among the accidents due to occupying the main track on the time of a superior train was the most disastrous accident ever investigated by us; it resulted in 90 deaths and 180 injuries. In this case a passenger train, inferior by direction, passed from double to single track and collided with the opposing superior train. No train register was maintained at the end of double track, and the conductor, who was busy collecting tickets, thought that a train which had been passed while on the double-track section was the opposing superior train. The engine crew were killed in the collision.

Three of the 25 derailments were due to defective equipment and 14 derailments were due to track conditions, including broken rails, switches being open or partly open, washouts, the malicious removal of rail connections, and to the poor condition of track. Five derailments were due to excessive speed; one was caused by an obstruction maliciously placed on the track and one resulted from an arrangement of signal lights at the end of double track which was such that the engineman thought a derail was closed and the signal clear, when the contrary was the case.

The failure of enginemen to observe and obey signal indications and the failure to provide adequate flag protection for trains continue to be the principal causes of collisions. Misreading signals, failing entirely to see signals due to fog, smoke, and steam, being temporarily engaged in other duties, or being asleep, constitute the more common reasons for the failure of enginemen to observe and obey signal indications. Accidents due to these causes have occurred on roads where the best trained and most competent men are employed. The only remedy proposed which appears to be adequate to check and provide protection against the occurrence of disastrous accidents of this character is the adoption of some form of automatic train control system for the purpose of compelling obedience to automatic block-signal indications.

The matter of providing proper flag protection for trains is in most cases essentially a question of observance or enforcement of rules. It has been clearly established as a result of accident investigations that numerous disastrous railroad accidents would beyond question be prevented by strict adherence on the part of the flagmen to the requirements of the flagging rules. Improvement in this regard can be effected by railroad companies by exercising proper supervision and care in the selection, training, instruction, and assignment of flagmen. In this connection attention is again called to the recommendation made in previous reports for the standardization of railroad operating rules. The adoption by railroads throughout the country of uniform operating rules, specific and definite in their requirements, and embodying the best operating practices now in vogue, would constitute an important step in providing increased safety in railroad operation.

Collisions continue to occur on lines which are operated by the time-table and train-order system, due to the weaknesses inherent in the train-order system of operation, which have been discussed in previous reports. There have also been several collisions in block-signal territory, which resulted from lack of necessary maintenance of automatic signals and failure to observe rules essential to the safe operation of the nonautomatic block system. Block-signal statistics indicate a very slight increase in railroad mileage operated by the block system during the calendar year 1918, and during the past four years the average net increase in block-signal mileage has been less than a thousand miles per year.

Investigations of a number of fundamental questions pertaining to railroad rails and the causes of their failure are now in progress. These investigations include both manufacturing conditions and service conditions encountered in the track.

Under authority of the act of October 22, 1913, tests have been conducted of an automatic train-control device and an automatic train-pipe connector. Detailed reports of the results of these tests have been transmitted to the Congress. During the fiscal year plans of 89 devices were examined and opinions thereon transmitted to the proprietors.

During the fiscal year three applications for medals of honor under the act of February 23, 1905, were received. In two cases we recommended to the President that the applications be denied, and he approved the recommendations. The third case is still under consideration.

Bureau of Locomotive Inspection

The work of this bureau during the fiscal year ended June 30, 1919, is shown in detail in the report of the chief inspector, published separately.

The tables below show in concrete form the number of locomotives inspected, the number and percentage of those inspected found defective, and the number ordered out of service because of not meeting the requirements of the law, together with the total defects found.

The amendment to the locomotive boiler inspection law of March 4, 1915, to include the entire locomotive and tender and all appurtenances thereof, did not become effective until September 4, 1915; therefore the record for the fiscal year ended June 30, 1916, includes accidents and casualties investigated under the amended act for only 9 months and 26 days of that year.

The following table shows the total number of persons killed and injured by failure of locomotives or tenders, or some part or appurtenances thereof, during the four years ended June 30, 1916-1919:

	Year ended June 30							
	1919		1918		1917		1916	
	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured
Members of train crews:								
Engineers	14	194	11	245	16	230	11	205
Firemen	22	265	19	306	21	304	12	225
Brakemen	11	82	6	62	13	60	9	74
Conductors	2	16	...	21	3	14	1	6
Switchmen	1	7	2	8	1	8	...	6
Roundhouse and shop employees:								
Boiler makers	1	9	...	11	...	11	1	11
Machinists	..	5	...	11	...	8	1	11
Foremen	..	3	1	4	...	1	1	3
Inspectors	..	6	4	4	...	3	...	3
Watchmen	..	2	...	3	...	5	...	8
Boiler washers	..	7	1	4	...	7	...	10
Hostlers	..	6	...	8	...	6	...	6
Other roundhouse and shop employees	1	11	2	19	2	19	1	21
Other employees	3	23	...	26	5	22	...	7
Nonemployees	2	11	...	24	1	23	1	3
Total	57	647	46	756	62	721	38	599

All accidents which have been reported to this bureau, as required by section 8 of the law, and rules 55 and 162 promulgated thereunder, have been carefully investigated and a report rendered, as required, for the purpose of determining, as far as possible, the exact cause of such accidents, and applying a remedy that will tend to prevent recurrences. Copies of such reports have been furnished to all interested parties, when requested, and to railroad officials, in order to acquaint them with the conditions, as disclosed by our investigations.

LOCOMOTIVES INSPECTED, NUMBER FOUND DEFECTIVE, PERCENTAGE INSPECTED FOUND DEFECTIVE, NUMBER ORDERED OUT OF SERVICE, AND TOTAL DEFECTS FOUND, BY COMPARISON

	1919	1918	1917	1916
Number of locomotives inspected	59,772	41,611	47,542	52,650
Number found defective	34,557	22,196	25,909	24,685
Percentage found defective	58	53	54.5	47
Number ordered out of service	4,433	2,125	3,294	1,943
Total defects found	135,300	78,277	84,833	71,527

NUMBER OF ACCIDENTS, NUMBER KILLED, AND NUMBER INJURED, BY COMPARISON, COVERING FAILURES OF ALL PARTS AND APPURTENANCES OF THE ENTIRE LOCOMOTIVE AND TENDER

	1919	1918	1917	1918
Number of accidents	565	641	616	537
Decrease from previous year..per cent	11.8	[1]4.1	...	...
Number killed	57	46	62	38
Decrease from previous year..per cent	[1]23.9	25.8	...	...
Number injured	647	756	721	599
Decrease from previous year..per cent	14.4	[1]4.8	...	...

[1]Increase.

NOTE.—Percentage of decrease not shown for 1916, because of amended act not being in effect the entire year.

NUMBER OF ACCIDENTS, NUMBER OF PERSONS KILLED AND NUMBER INJURED; DUE TO THE FAILURE OF SOME PART OR APPURTENANCE OF THE LOCOMOTIVE BOILER ONLY, WITH THEIR PERCENTAGE OF DECREASE, BY COMPARISON OF THE FISCAL YEARS ENDED JUNE 30, 1912-13, WITH THE FISCAL YEARS ENDED JUNE 30, 1918-19

	1919	1918	1917	1916
Number of accidents	341	398	820	856
Decrease 1919 from 1918.....per cent	14.3	...	...	...
Decrease 1919 from 1912.....per cent	60.2	...	...	...
Number killed	45	36	36	91
Increase 1919 over 1918.....per cent	25	...	...	...
Decrease 1919 from 1912.....per cent	50.5	...	...	...
Number injured	413	510	911	1,005
Decrease 1919 from 1918.....per cent	19	...	...	...
Decrease 1919 from 1912.....per cent	58.9	...	...	...

The fact that it is known that all accidents will be carefully investigated, and the existing conditions made known by parties whose only interest in such matters is to prevent recurrences, has had a most beneficial effect in reducing the number of casualties to employees and travelers upon railroads, as indicated by a comparison of the reports rendered.

The reduction in the number of accidents and casualties is gratifying when it is remembered that up to September 4, 1915, the law applied to the locomotive boiler and its appurtenances only, since which date it has covered the entire locomotive and tender and all of their appurtenances.

A summary of all accidents and casualties occurring during the fiscal year ended June 30, 1919, covering the entire locomotive and tender and all of their appurtenances, shows a decrease of 11.8 per cent in the number of accidents, an increase of 23.9 per cent in the number killed, with a decrease of 14.4 per cent in the number injured, as compared with the year ended June 30, 1918.

A summary of all accidents and casualties, caused by the failure of the locomotive boiler and its appurtenances only, for the fiscal-year ended June 30, 1912, which was the first year of the existence of the law, compared with a summary of all accidents and personal injuries which occurred during the fiscal year ended June 30, 1919, shows the substantial decrease in the number of accidents of 60.2 per cent; a decrease in the number of persons killed of 50.5 per cent; and a decrease in the number injured of 58.9 per cent, caused by the failure of such parts.

The increase in the number of persons killed during the

last year over the year previous is, to a considerable extent, due to some very violent explosions resulting from firebox crown-sheet failures. These failures serve to illustrate the prime importance of proper firebox construction, inspection, and repair, together with the location, inspection, and maintenance of such appliances as water glasses, gauge cocks, injectors, steam gauges, and safety valves.

Substantial progress has been made in equipping locomotives with headlights which will meet the requirements of our orders of December 26, 1916, and December 17, 1917, the effective date of which was fixed as of July 1, 1918. Notwithstanding the strenuous opposition offered, by certain carriers, to the adoption of these requirements, the use of such lights as a safety device is meeting with the general approval of the employees who are employed where locomotives are so equipped; and a number of the officials, under whose jurisdiction these lights are being operated, have expressed their opinion that such lights are economical and add materially to the safety of operation.

Under our order of April 7, 1919, certain modifications in the rules which were granted in our order of September 20, 1917, because of conditions brought on by war, were abrogated and others substituted. Experience had demonstrated that certain modifications granted in our order of September 20, 1917, could be made permanent without adversely affecting the safety of operation; therefore, such modifications were retained in the rules.

It has been the purpose to co-operate with the United States Railroad Administration and the officials of the various carriers to the fullest extent consistent with our duties and the purpose of the law, and avoid as far as possible, being compelled to order locomotives removed from service for unsafe conditions at a time when traffic might be seriously delayed.

This bureau has also furnished transcribed reports showing defects found on all locomotives ordered out of service and all defects found approaching violations of the law and rules to the federal managers or the chief operating officers of the carriers. This was done for the purpose of keeping them informed so that proper repairs might be made to such defects before they became violations and to prevent, as far as possible, failures which might result in serious accidents to persons and property, and consequently serious delay to traffic.

Bureau of Valuation

Fifty-three tentative valuations have been served, and hearings are now being held upon protests which have been filed. In connection with the properties of the Texas Midland Railroad, the Winston-Salem Southbound Railroad Company, and the Kansas City Southern System, action upon protests has been taken and final reports published, except that we have not fixed a single sum as the final value of the common-carrier property of any of these carriers.

As stated in our last annual report, the work of the bureau had been seriously interfered with during the war by inability to obtain and retain competent men, and it was expected that with the cessation of hostilities this condition would disappear, but it has not. The difficulty of finding men with the requisite expert qualification has not lessened, and the cost of employing them has materially increased. This has to an extent interfered with progress.

The field work of the engineering section has been substantially finished. The road and track parties, which make the major part of the field inventory, have been disbanded in the Southern, Western, and Pacific districts and will be disbanded in the Central district about January 1. A small amount of branch work, that is, the inventorying in the field of buildings, bridges, and equipment, is still to be done in all districts except the Southern; and owing to a mistake in estimating the mileage assigned to the Eastern district, road and track work in this district will run some four or five months beyond the previously estimated average date of completion of January 1, 1920.

In the land section our progress has not been as great as was anticipated owing mainly to the inability of carriers to supply necessary preinventory information, like maps of their right of way. Our appraisers can not fix the value of these lands until the carrier has pointed out their location and extent.

The greatest difficulty is being experienced in the accounting section and here again the delay arises from the inability of the carriers to furnish us proper information, especially as to the cost of their equipment and the original cost of their lands. The effect of the war has been to increase the demand for accountants, especially of the higher grade, more in proportion to the supply than in case of any other class of employees engaged in our valuation work. Not only is there an unusual demand for accountants in private occupation but the government itself has become a large employer. The federal control of railroads has imposed upon the railroad accountant a great amount of additional work for which an adequate number of competent men has not been available.

In our report in the Texas Midland case, we said:

"* * * Tentative valuations in which a simple sum as the value of the property is not stated will in due course be supplemented by such finding and a final valuation, including a single sum as the value of the property, will be duly issued."

At the time that report was issued it was our thought that action concerning final value should not be taken until after a comparatively large number of tentative valuations had been prepared and served and the interested parties had been given an opportunity to be heard fully upon the question. All parties to the record represented to us that in the presentation of this question they would be greatly aided by the observation and study of a comparatively large number of cases, and that we could act in the premises more intelligently than would otherwise be possible. We have therefore arranged to hear argument early in January.

Orders of the Regional Directors

REPORT OF OPERATING CONDITIONS. — The Southwest regional director, by Supplement 3 to Order 36, directs reports of operating conditions to be made monthly instead of semi-monthly.

Export Bills of Lading Via North Atlantic Ports.—Supplement 2 to Circular 240, of the Southwestern regional director, gives additional names to the list under paragraph 8 of the original circular (*Railway Age,* page 424, August 29).

Disposition of Old Ties.—Order 236, of the Southwestern regional director similar to file 113-1-1 of the Northwestern regional director (*Railway Age,* September 12, page 518).

Condition of Locomotive Cabs. — The Northwestern regional director, file 66-1-122, states that the condition of many locomotive cabs is such that in cold weather severe hardship to the men as well as loss of efficiency will result. Openings in cabs around boilerheads, injector pipes, reverse levers and other places must be properly closed; clear vision windows must open and close properly; cab heaters must be applied and be put in proper condition for service, and suitable cab curtains must be provided as soon as needed.

Cold Weather Fire Warnings. — The Southwestern regional director, in Order 242 (renewal of Order 85), quotes Bulletin 3 issued by the manager of the Insurance and Fire Protection Section, relative to prevention of fires in the winter and the necessity for eliminating fire hazards.

Double Sheathed Box Cars Built by C. M. & St. P.

Underframe Has Steel Center Sill and Wooden Side Sills; Wooden Frame Body with Steel Ends

A 40-TON BOX CAR in which many interesting features have been incorporated has been designed by the Chicago, Milwaukee & St. Paul, and a lot of 1000 is now being built in the company's shops at Milwaukee. The general outside dimensions of the car are as follows: length 42 ft. 1½ in.; height at eaves 13 ft. 2 in., and width at eaves 9 ft. 11 in. The inside of the body is 41 ft. 5½ in. long, 8 ft. 10⅜ in. wide, 9 ft. 1⅞ in. high at the center and 8 ft. 8⅝ in. high at the sides with a door opening 8 ft. 2¼ in. high. The cubical capacity of the car is 3267 cu. ft. and the average light weight is 44,800 lb.

Underframe

The underframe is made up of a steel center sill with three wooden sills and three truss rods on each side. The center sill consists of two 12 in., 40 lb., channels, 43 ft. long, with a ¼ in. by 20 in. cover plate extending practically the full length on top of the sill. A double body bolster of the built-up type is used. The top chord members are ¾ in. by 7 in. and pass through the center sill channels near the neutral axis and over a combined filler and center plate casting. The bottom bolster members are 1 in. by 7 in. and pass under the center casting. Malleable iron fillers are bolted between the two members at each intermediate sill and also at the side bearings.

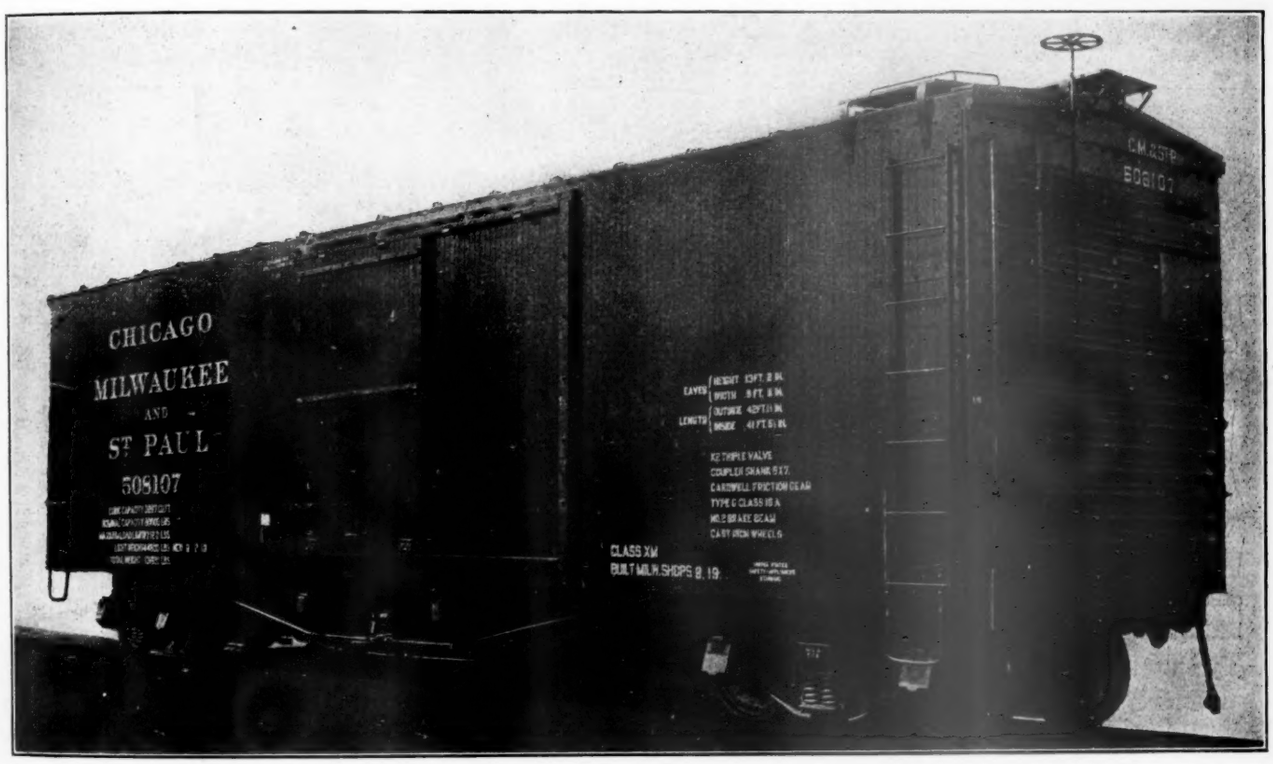
The end sill is of wood, 6½ in. wide by 8½ in. high. It is cut out to a height of 3¾ in. where it passes over the center sill. Two nailing strips 3¾ in. high are bolted along each side of the center sill. With the four intermediate and two side sills, there are eight points of support for the floor boards. The sills are all 8½ in. high, the width of the intermediate sills being 4 in. and of the side sills 4½ in. The truss rods are 1¼ in. in diameter, with ends upset to 1½ in. The needle beams are secured to substantial spacing castings attached to the bottom of the sills.

The draft gear is of the Cardwell friction type. One of the illustrations shows the details of its application. A coupler with a 5 in. by 7 in. shank is used but slots for a coupler key are provided in the sills.

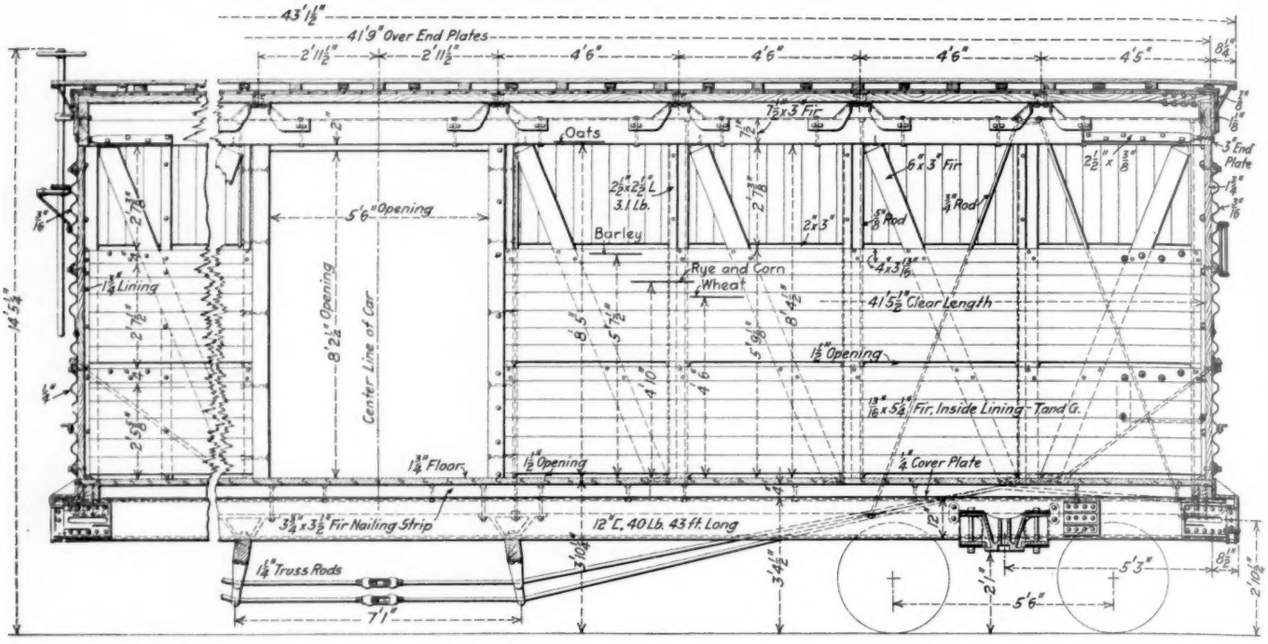
Body Construction

The side trusses are made up of 6 in. by 3 in. posts and braces, each vertical post being reinforced by a 2½ in. by 2½ in. angle iron weighing 3.1 lb. per ft. The door posts are made up of a 4½ in. by 5⅝ in. and a 2 in. by 3 in. post with a 2¼ in. by ¾ in. wrought iron strip between. These parts are bolted together and the front post is further reinforced by the door stop. The side plate is 7½ in. by 3 in. There are two belt rails, 4 in. by 3 13/16 in., located 2 ft. 5⅝ in. and 5 ft. 5⅛ in. from the floor. The flooring is 1¾ in. thick and the inner and outer sheathing are 13/16 in. thick.

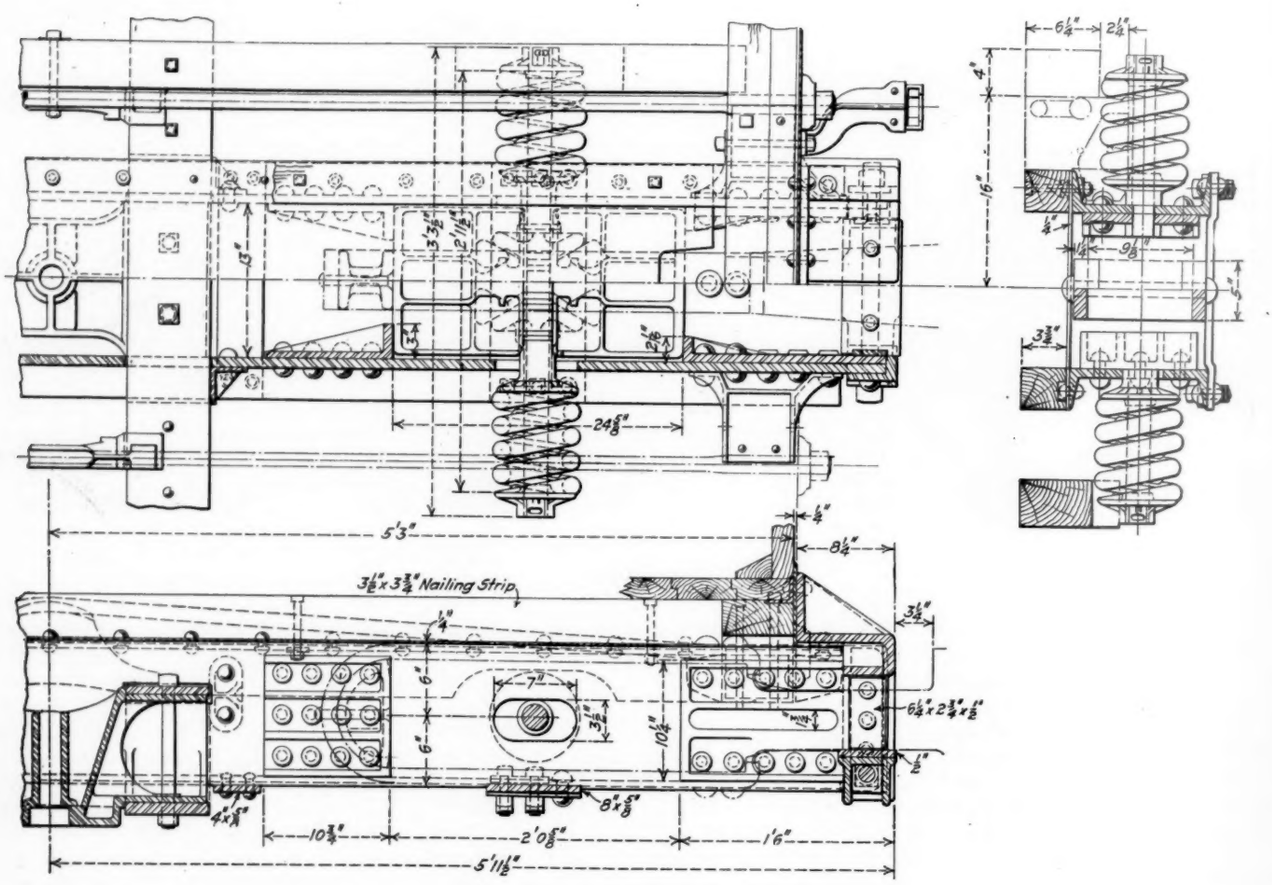
The ends are of the Murphy two-piece type, ¼ in. plates being used for the lower section and 3/16 in. plates for the upper. The lower plate extends down behind the striking casting and over the end sill, and a 2½ in. by 2½ in. angle iron riveted to the plate sets into the upper face of the sill. This construction is clearly shown in the drawing of the draft rigging. Diagonal braces extend from the post pocket casting



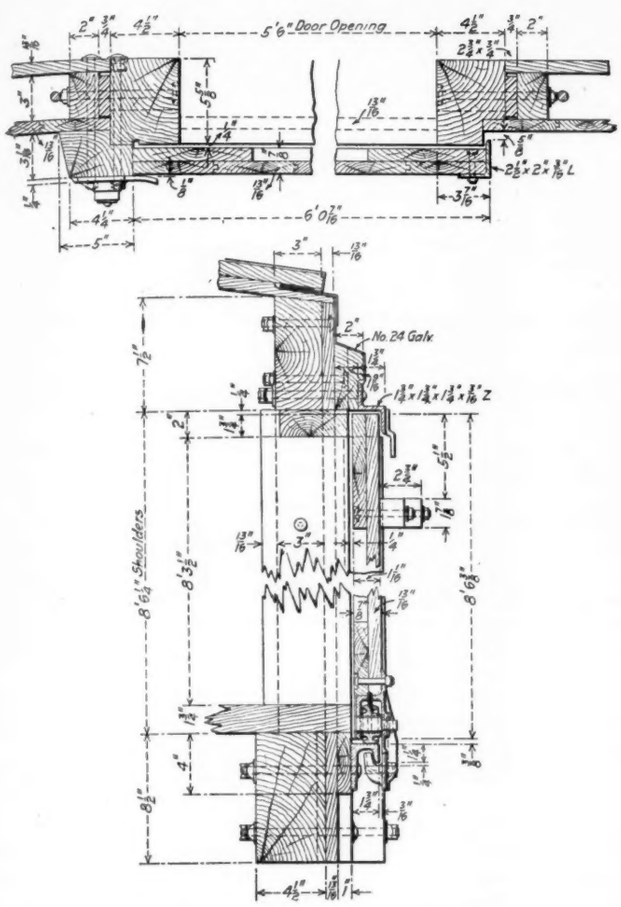
Double Sheathed 40-Ton Capacity Box Car Designed and Built by the C. M. & St. P.



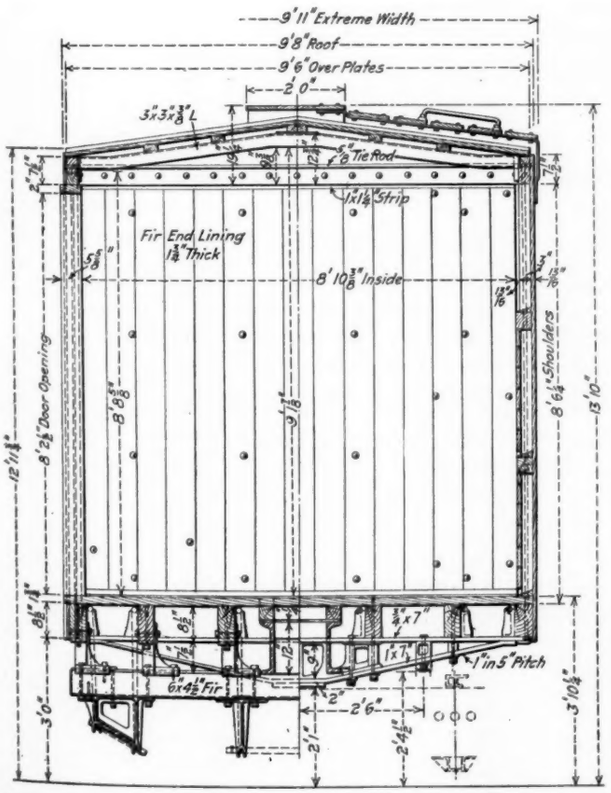
Longitudinal Section Showing the Arrangement of the Body Framing



Details of the Draft Gear Application



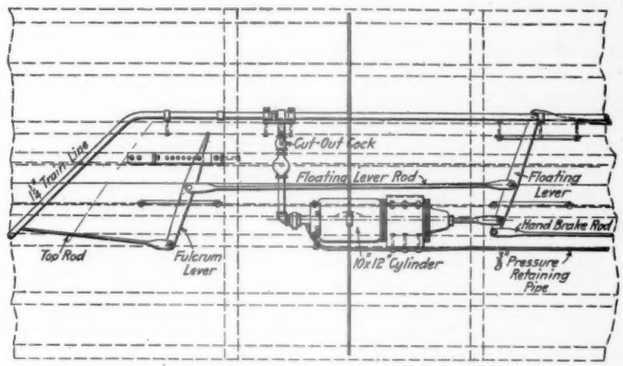
Details of the Door Construction



Half Sections of the C. M. & St. P. Double Sheathed Box Car

over the bolster to the top of the lower end section on each side. The end plate, to which the upper section is joined, is 3 in. thick and is fastened to the side plate with strap bolts. The end is lined with 1¾ in. matched boards placed vertically.

The roof is supported on Ideal carlines formed of two 3 in. by 3 in. by ⅜ in. angles, to which are bolted the wooden purlins and ridge pole. The roof is the Murphy type X L A flexible. The doors are of the bottom supported type with



Arrangement of the Foundation Brake

Camel door fixtures. Details of the construction at the doors are shown in one of the illustrations.

Brake Slack Adjuster

An interesting detail of the brake rigging is the method employed for taking up the slack. No adjustment is provided in the bottom or top rods. Instead the fulcrum lever is attached to a bracket which has several holes for adjusting the piston travel. The lever is provided with a handle and lettering on the side of the car calls attention to the fact that excessive travel is to be taken up at the fulcrum lever and not at the trucks. The convenience of this arrangement has proved of great assistance in eliminating excessive piston travel.

Amending Section Four of the Act to Regulate Commerce

G. W. Luce, freight traffic manager of the Southern Pacific at San Francisco, Cal., has recently written a treatise on the disadvantages which would accrue if the "long-and-short-haul" clause of the Act to Regulate Commerce is amended as proposed in the bill recently introduced in the Senate. Mr. Luce says in part:

"There was introduced in the Senate, on May 20, 1919, a bill to amend Section Four (commonly called the long-and-short-haul clause) of the Act to Regulate Commerce. Much has been said by the press of interior cities regarding this bill, giving the impression that a great disaster would befall such communities if the bill were not passed. The following is a quotation from articles that have appeared in some of the interior papers:

> 'Inland towns and cities no longer will be compelled to pay higher freight rates than terminal points if the bill to amend the long-and-short-haul clause in the Interstate Commerce Law is passed.'

"This statement, taken by itself, may be true, but the freight rates which interior communities will be required to pay, if the bill is passed, will be higher than they are today, or ever have been, for this reason: If the pre-war service between the Atlantic seaboard and the Pacific coast is resumed, and the transcontinental railroads are prohibited

from meeting the water rates, unless they make the same, or lower, rates to interior points (which they cannot afford to do unless water rates are sufficiently high) the traffic will move by water, and if the railroads forego the revenue on that traffic, it is quite evident they must increase the rates sufficiently on the only remaining traffic, which is that to the interior, to earn the necessary money to pay their bills. The traffic between the Atlantic and Pacific coasts is only one of the many such situations. They exist in all parts of the United States.

"Are the railroads now to be compelled by such an amendment to so adjust their rates as to prevent their handling any traffic that can move by water, and be limited to interior traffic that can only be handled by rail and to increase their rates on such traffic so that their earnings will be sufficient for fixed charges, operating expenses, taxes, and a reasonable profit? Also, are the railroads to be restrained from making necessary rates on United States manufactured goods from interior points to the Atlantic, Gulf or Pacific coast cities to meet competition of foreign-made goods reaching these cities by water?

"It is not contended here that the railroads should be permitted to make rates that will force the water lines out of business. I suggest, therefore, that the railroads be permitted to fairly meet the water line rates and enjoy a share of the business, utilizing their facilities to the fullest extent; the Interstate Commerce Commission to say to what extent the railroads may go towards meeting water competitive rates without affecting intermediate rates, which must at all times be reasonable in, and of, themselves.

"If the traffic is forced to move by water, and then transshipped to interior points, the railroad not being permitted to fairly meet water competition, it follows that the railroads must fix the interior point to which they can afford to handle the traffic from points of origin at rates based on the water rate, plus the rail rate back to such interior point. Further, if rates on traffic from points of origin to destinations beyond such fixed point must be the same, or higher, the traffic would then be forced to the water lines.

"What difference does it make to the merchant at 'inland towns and cities' whether his freight is moved via rail direct, or via water and rail route, so long as the through charge is about the same by both routes? It is to his advantage to have at his command the use of either route. He would have the benefit of daily service by rail, and not be dependent wholly upon specific sailing days, a week or so apart, by water routes.

"Viewing the situation also from the standpoint of moving traffic by rail through interior points to terminals, or coast cities; it is helpful to the interior, for the more trains handling traffic through the interior to water terminals, the more trainmen are employed and more material and supplies are used, which is always beneficial to both interior and terminals. Again, it is beneficial or harmful to the interior as that service is increased or diminished, depending on whether or not the railroads are compelled to retire from handling traffic to water terminals.

"Are the terminals, or coast cities, to be denied the choice of either rail or water service and are they to be compelled to use the water lines and be denied the use of the rail lines by the passage of a law forbidding an adjustment of rates by rail, fairly competing with the water lines in both rates and service?

"It seems to me that all manufacturing industries, as well as all jobbers, both at interior and coast cities, should not be favorable to the passage of an amendment to the Fourth Section of the Act to Regulate Commerce which will create a rigid-long-and-short-haul clause.

"Measured by test the Fourth Section, as it now reads, is just and fair to all interests, and if continued to be properly and fairly administered will continue helpful to both rail and water carriers, also the public both at interior and coast cities, especially if the rates of the water lines in the future are also controlled and regulated by the Interstate Commerce Commission."

Plumb "Conference" Urges Continued Government Control

THE CONFERENCE on Democratic Control of the Railroads organized by the Plumb Plan League, has issued a statement urging that pending railway legislation be delayed until an investigation of the whole subject can be made by an official commission created for the purpose. It suggests that government control be continued until such an investigation is laid before Congress and the country. Statement said in part:

"There is no justification for precipitate haste in turning the railroads back to their owners. Neither the public, shippers nor consumers are suffering under the present arrangement. In many ways they are receiving better service than ever before, and at much lower rates than the railway owners are demanding.

"Abnormal war conditions created deficits under federal control. These deficits have disappeared. The railroads are now more than paying their way. Official reports of the Railroad Administration for July and August, 1919, show that the roads are earning all operating charges, including maintenance, as well as the governmental rental of over $900,000,000 a year. They are actually earning a surplus for the government. In July they earned a surplus of $2,316,501, and in August $16,296,025, in excess of all charges.

"These earnings are likely to increase, rather than decrease, in the future, as business once more assumes normal conditions.

"Despite this showing, railroad owners are demanding an immediate increase in operating and freight rates of at least 25 per cent. This will amount to nearly a billion dollars a year. Other railway representatives, speaking for different classes of securities, are demanding an increase running up to 50 per cent which would amount to approximately $2,000,000,000 a year."

The conference says that to return the railroads now would be to restore them to the bank syndicate which previously controlled them. The conference recommends that:

1—Congress postpone action on pending legislation and continue federal control for two years.

2—That an expert commission be created representative of railroad, financial, industrial, agricultural, and labor interests with instructions to investigate the entire problem of transportation with the definite aim of developing it into an agency for the upholding of industry, the promotion of production, the expansion of foreign trade; that means be devised by which all transportation agencies, rail, water and truck be integrated into a single system from producer to consumer as a means of stimulating production and reducing the cost of living, and that means of decentralized administration be worked out so that the railroads will come in close and intimate contact with shippers, producers, and the public and for such democratic control as will awaken the interest of officials and workers as well. Investigations should be made into the transportation agencies and proposals in foreign countries.

THE RAILWAYMEN'S BUNS.—Is it higher pay or greater leisure that has filled railwaymen with a craving for tea and buns? At many of the great London stations now it is difficult for the mere passenger to get served in the refreshment rooms, so great is the rush of men in railway uniforms. This writer dropped into the refreshment room opposite No. 18 platform at Liverpool street yesterday morning and counted fourteen porters and other railwaymen busy with tea or coffee and buns. It was pleasant to meet them and to overhear their cheery "shop."—*London Chronicle.*

Annual Convention of Railway Electrical Engineers

Present Applications of Electricity to Railroad Work Presage Great Development in the Future

THE ELEVENTH ANNUAL CONVENTION of the Association of Railway Electrical Engineers was held at Hotel Morrison, Chicago, October 28-31. The opening session was called to order by the president, J. E. Gardner, of the Burlington, at 10:00 a.m., October 28.

In a brief address President Gardner called particular attention to the necessity for active participation in the discussion by the members. He also expressed the appreciation of the association for the splendid array of exhibits which the Railway Electrical Supply Manufacturers' Association had provided.

The report of the secretary-treasurer, which followed the president's address, showed the excellent financial status of the association.

Locomotive Headlights

The present importance of the electrical headlight on steam locomotives is clearly emphasized by the fact that three distinct committee reports out of a total of nine were devoted to various phases of this subject. The time limit set by the Interstate Commerce Commission when all locomotives must be equipped with high power headlights is but a few months away, and this fact was responsible for the great interest shown in the numerous details of electric headlight installation and maintenance.

The reports of the committee on electric headlights opened up a discussion of many construction and operating details of the various equipments. The committee's reports showed that it held two meetings in conjuction with representatives of the manufacturers of electric headlight equipment, the companies represented being the General Electric Company, the Pyle-National Company, the Schroeder Headlight & Generator Company, the Electric Service Supplies Company, the Buda, Ross Company, the United States Headlight Company, and the Loco Light Company. The object of these meetings was to arrive, if possible, at some basis for the standardization of certain parts of headlight apparatus. Among other things a standard generator base plate was recommended by the committee, such a plate having been designed by one of the members. This plate is made in such a way as to make it possible to bolt it to any type of headlight generator now on the market.

It was recommended that the manufacturers furnish headlight turbo-generator sets of such design and capacity as to operate with practically constant voltage under any load within the rated capacity of the equipment, and with steam pressure ranging from 100 lbs. to 250 lbs. boiler pressure, without the necessity for change of nozzle or governor parts.

Ball bearings of rugged construction were recommended. These were to be of standard size and manufacture, which would enable the railroads to obtain them for their requirements in the open market, if so desired.

It was recommended that turbo-generator sets be so designed as to enable the use of either oil or grease for lubrication, sufficient capacity being provided to lubricate bearings for a minimum of one month at one application of lubricant. Much discussion developed on the question of proper lubrication. Some roads that have been using grease have had satisfactory results, while others have had more or less trouble with this lubricant. One representative said that he had found that when using a stiff grease the balls were never lubricated and that when a thin grease was substituted, they became clogged. His particular problem had been solved by using a good grade of oil. Representatives of two of the headlight manufacturers offered further testimony on this point, which seemed to corroborate the statement that oil was superior to grease. Each manufacturer had run tests with both grease and oil, and each had eventually arrived at the same conclusion—that oil was the better lubricant.

An interesting point was brought out in the discussion when it was suggested that it might be advisable to increase the capacity of the headlight turbo-generator sets in order that their range of usefulness might extend to other fields. The specific use mentioned was the equipping of tugboats to supply power to wireless telegraph sets. Such a use is, of course, restricted, as far as railroads are concerned, to companies operating tugboats as a part of their regular equipment. There is, no doubt, however, that in time the efficient, compact turbo-generator will find other uses than that of locomotive lighting, but it is also probable that various sizes will be built to meet the requirements of different fields, rather than attempt to make one type for universal use.

In view of the fact that so many thousands of locomotives will shortly be equipped with electric headlights the problem of instructing those who are to maintain this apparatus becomes one of special importance. The work of co-ordinating the information and instruction necessary for the use of headlight maintainers was assigned to the Committee on Electric Headlight Handbook. In its report this committee outlined a book, comprising five sections, as follows:

Introduction. Descriptions and illustrations, covering the various makes and types of practically all locomotive lighting, including suburban lighting, equipment manufactured in this country. Instructions for operation and maintanance of all the various makes and types of locomotive lighting equipment manufactured in this country. Methods of installation, as used by a number of the railroads at the present time, both for locomotive lighting and suburban lighting. Standard practices for conduiting and wiring locomotive headlight equipment as recommended by the association.

It was the idea of the committee to bring out a handbook on electric headlights, worked up along the same general lines as the handbook for car lighting, which was published by the association last year. Among the association members the general opinion seemed to be that the sooner the book could be placed in the hands of the headlight maintainers, the better it would be, as the need for some trustworthy source of information on this subject is beginning to make itself felt.

Another phase of the headlight question that is developing side by side with the installation of the equipment, is the necessity for some system of keeping operating and maintenance records. The committee on compiling costs for maintenance of headlight equipment submitted a number of sample forms as recommended practice for the use of railroads in keeping actual records for their costs of operation and maintenance of electric headlights, with the idea that if such information is to be exchanged between different railroads, it would be comparable on account of having been drawn up on the same, or practically the same form.

Electrification

The Committee on Electrification presented a unique and valuable report of the most unusual character. The re-

port consisted of two sections, the first being an outline of the many factors to be considered in any investigation in the matter of electrifying existing steam roads. The great mass of details that must be given careful consideration to determine whether or not the electrification of any piece of track will prove practical is truly remarkable. To those who have never had the occasion to make inquiry into any electrification project, this first section of the report was a revelation. The investigation form as presented in the first section of the report is undoubtedly the most comprehensive and complete outline ever compiled, and it will be of greatest value to those interested in electrification either in the near future or within the next 10 or 15 years.

The second section of the report consisted of a bibliography which covers practically everything that has been written on the subject of electrification from 1908 to the present time. In most cases the author's name is given, so that ready reference is had to any article or book, by any particular author. The vast amount of information contained in these several hundred articles and books forms a source of inestimable value to any engineer making a study of electrification problems. This report may be found in the 1919 proceedings of the Association of Railway Electrical Engineers, and also in the October, 1919, issue of the *Railway Electrical Engineer*.

Electric Car Lighting

The work of the Committee on Illumination was divided between two sub-committees. Sub-committee *A* presented a report on car illumination, which included a large number of photographs of car lighting fixtures used in both coaches and Pullman cars. A number of curves were also included in this report, showing the intensity of illumination obtained with various types and arrangements of fixtures at different terminal voltages. Parts of the report were exceedingly technical in nature, but the greatest portion treated the subject in an easy, descriptive manner. From the evidence presented, the indications are that while the average illumination of day coaches is by no means poor, the demands of the traveling public for more light will probably result in increased illumination in the future. It was brought out in the discussion that little or nothing had been done to improve the lighting of diners and baggage cars, and that it might be of advantage to confine the investigations of the association for a time to these two types of cars.

Sub-committee *B* of the Illumination Committee presented a report on incandescent lamps and lamp specifications. This report included specifications for tungsten lamps of various types and voltages. One of the things that falls within the scope of lamp specifications is the satisfying of the demand for a rugged carbon incandescent lamp for portable service. The advent of the tungsten lamp with its greatly increased efficiency has all but driven the carbon lamp from the market. This condition has been much deplored, for while the carbon lamp cannot compare with the tungsten for efficiency, it does prossess rugged physical characteristics, which make it particularly desirable for use on extension cords. In connection with car lighting lamps, the fact was brought out that very recently the manufacturers had developed a lamp for lighting country homes that was designed for operation on 30-32 volts, and it was thought perhaps that there might be some possibility for getting the wrong lamp when purchasing. In fact, such an instance did occur on one road and was not discovered until the lamps began to fail. Although designed for car lighting voltage, these country home lamps lack the rugged construction necessary to stand the vibration in car service and failed very quickly after being installed.

In preparing the specifications for electric train lighting equipment, the committee assigned to this subject earnestly recommended as much reduction as could possibly be made in the variety of apparatus without impairing the quality of the service. The subject is complicated and the progress necessarily slow. The aim of this committee was to present the matter before the association as a progress report, so as to obtain the opinion of the car lighting engineers, which would act as a guide during the coming year. One of the most important matters considered was the recommendation for a standard rating for axle generators. Another was the question of increasing the height of battery boxes from 21½ in. to 23 in.

Stationary Power Plants

The Committee on Railroad Stationary Power Plants presented an exceedingly long report, full of great detail. It should be considered, perhaps, as an essay on ideal power plant installation and operation rather than a report of existing or proposed equipment. There was practically no discussion on this subject.

Electric Welding

The Report of the Committee on Electric Arc Welding consisted principally of a series of additions and changes to the masterly work presented by the welding committee at last year's convention. For the greater part, these changes were not of great importance, but were simply such details as had come to light through another year's experience with the welding art. The report included many photographs showing the various types of welding accomplished on actual machinery. One of the applications of electric welding in which much interest is shown at present, is the welding of cast iron, such as broken cylinders. By setting studs into and alongside the broken surfaces and placing the welded metal around these studs, a joint is made in broken castings that possesses fully as much tensile strength as any equivalent cross-section of the same casting.

In the discussion of the report the question of whether or not a welding supervisor was necessary for railroad welding aroused much comment. In the opinion of representatives from roads that have gone into the matter of arc welding most extensively, it is absolutely essential that some one be appointed to make a thorough study of the art if successful welding is to be expected. During the discussion the question was asked as to the relation in time consumed in welding tubes by the open fire method and by the electric welding process. From the statements of those who are doing much of this work by the electric welding process, its vast superiority to the open fire method was immediately apparent. Twenty to 25 tubes can be welded per hour by the open fire and in some cases possibly a few more, but with the attendant danger of sacrificing the quality of the work. With the electric process it is quite possible to make as many as 80 welds per hour, the average weld requiring from 25 to 30 seconds.

At the final session of the convention the following officers were elected for the ensuing year: President, L. S. Billau, assistant electrical engineer, Baltimore & Ohio, Baltimore, Md.; senior vice-president L. C. Hensel, chief electrician, St. Louis-San Francisco, Springfield, Mo.; junior vice-president, E. S. M. Macnab, electrical engineer car lighting, Canadian Pacific, Toronto, Canada; secretary and treasurer, Joseph A. Andreucetti, assistant electrical engineer, Chicago & North Western, Chicago. Executive committee: L. C. Moore, electrical engineer, Missouri Pacific, St. Louis, Mo.; J. R. Sloan, electrical engineer train lighting, Pennsylvania Lines East, Altoona, Pa.; A. E. Voight, car lighting engineer, Atchison, Topeka & Santa Fe, Topeka, Kan.; C. H. Quinn, electrical engineer, Norfolk & Western, Roanoke, Va.; E. Lunn, chief electrician, Pullman Car Lines, Chicago; F. J. Hill, chief electrician, Michigan Central, Detroit, Mich.

Commissioner Woolley Opposes Return of Roads

Increase in Freight Rates Will Add Greatly to the Cost of Living—The Labor Question

ROBERT W. WOOLLEY, of the Interstate Commerce Commission, in an address before the American Academy of Political and Social Science, on October 18, at Philadelphia, opposed the return of the railroads to private management on the ground that such a step would result in an increase in rates which he declared would be multiplied in its effect in the cost of living. He proposed to check the profiteer by holding down the rates. Mr. Woolley said in part:

"Mr. Cuyler, chairman of the railroad executives, testifying before the interstate commerce committee of the Senate last winter, sounded an alarm, although he may not have meant to do so, when he stated that upon the return of the railroads to their owners it will be necessary for the Interstate Commerce Commission to grant a further increase in freight rates. What the measure of this increase may be I am sure I do not know. It seems to be generally agreed that it will have to be at least 25 per cent; some have placed it as high as 50 per cent. In a speech delivered at St. Louis in June last, Director General Hines stated that an advance of $300,000,000 in freight rates would be reflected in the cost of the finished article to the consumer to the extent of $1,500,000,000. Investigations made in normal times amply justify such a prediction. For instance, when an increase of 10 cents per ton was granted on anthracite coal in 1902, the price of a ton of anthracite to the consumer advanced 50 cents, and it never came down. An increase of 25 per cent in freight rates would mean approximately $875,000,000, which the people would have to pay to the railroads, and using Mr. Hines's ratio, $4,375,000,000, which the ultimate consumer would have to pay for what he uses, eats or wears because when he buys a finished article he pays an accumulation of increases.

"Does Congress propose to turn back the railroads to their owners at this perilous time and thereby make new high price levels instead of lower price levels inevitable, or does it propose to enact legislation requiring the holding of these roads for a fixed reasonable period following the proclaiming of peace and thereby aid the vitally important work of checking the profiteer and getting us back to normal? That is the problem in a nutshell.

"We are at the cross-roads. Return the railroads and increase freight rates and I fear no measure before the House or the Senate today can save us. For nearly a year now, in statements to Congress and in addresses before conventions and commercial clubs, I have been contending that the present freight rates are ample, that the operating revenue of the railroads in the period of shrinking or vanishing traffic following the signing of the armistice was no test of their sufficiency and that as we approach a general resumption of industrial activity, the soundness of my contention would become evident. In other words, though hostilities ceased with the signing of the armistice, economic disturbances due to the war did not cease by any means.

"That there should have been an operating deficit tremendous in proportions following the cessation of hostilities was inevitable. As a war-making measure there had been stored in all big centers and in many smaller ones, large reserves of coal in order that the fearful experience of the winter of 1918 might not be repeated. Building operations, other than those conducted by the government, had practically ceased, private enterprise had either put its shoulder to the wheel in the winning of the war or it had stepped aside. When you consider that the products of the mines, chiefly coal and ores, road and building material constitute fully 70 per cent of all the freight traffic of the railroads, it is easy to understand that the Savior of man himself, with the Arch-angel Gabriel as his chief assistant, could not have earned the standard return without increasing freight rates and consequently making higher and higher the cost of living, unless he had performed a miracle.

"I hope you will pardon me for taking pride in the fact that my prediction as to the early disappearance of the monthly operating deficit has come true. Since July 1 the railroads have earned the standard return and a few millions besides. Congress should treat the total amount of the operating deficit incurred from the beginning of federal control to July 1, 1919, as a war cost, and appropriate for it out of the public treasury just as only one year ago it was appropriating billions for munitions with which to vanquish the Hun. Let the government retain the railroads during the period of reconstruction and hold freight rates where they are. By pooling receipts of all the roads it does, with the present operating ratio of 85 per cent, what would be impossible for most roads under private control. Let it help, not hinder, the President in his fight on the high cost of living.

"The President and the director general have dealt successfully with labor. As I say this I realize what is running through the minds of some of you. You are thinking of the substantial increases in wages granted railroad workers.

"Denouncing the government for doing what capital did in the steel plants, the munition plants, the shipyards, and in many other industries has been a favorable sport with those who refuse to deal with this problem fairly, who find it convenient to forget what the presidents of the great railroads of the eastern United States said they needed money for, how many rate increases they might need for the same purpose, when they testified in the fifteen per cent case before the Interstate Commerce Commission in November, 1917.

"How easy it is for those who seem to be afraid that the government will not remit the railroads once more to the mercies of great banking houses for capital with which to finance additions and betterments to forget the picture of labor conditions on the railroads in the autumn of 1917 painted by Samuel Rea, how skilled labor was leaving to take up unskilled employment at much better wages in the shipyards, munitions plants and steel plants; how it was necessary to use three men where formerly two men would do; how the shortage in Official Classification territory especially was becoming alarming. But joyfully do they point to the fact that on the date of the signing of the armistice there were approximately 145,000 more men employed on the railroads than there were at the time the railroads were taken over by the government. I have asked this question once before. Suppose Director General McAdoo had not so augmented his force that he could get approximately 100 per cent efficiency no matter what the emergency, and a crisis had found him unprepared, would those who now talk of waste and prodigality have come forward with paeans of praise for the niggardly policy he had pursued? The ratio of labor cost to the entire operating cost in 1917 was 61.36; in 1918 it was 65.54 and I am informed by the Railroad Administration that for the first seven months of 1919, it is estimated to have been 64 per cent. I wonder

how this showing compares with that made in some of our other big industries?

"If the present unified control is done away with and each road now under federal control is turned back to its owners on January 1, what is to be the policy of those owners toward labor? Have the executives of the corporations who have been sitting on the side lines criticising for two years caught a vision out of all that has happened, and are they ready to deal with the labor problem sanely and fairly—and by that I do not at all mean abject surrender to labor's every demand—or do they propose to pursue the mailed fist policy and run the risk of seriously crippling the transportation systems of the country in the hour of its greatest economic need?

"Several days ago one of the foremost traffic attorneys of the country told me an interesting story. He was shouting a few months ago to give the railroads back; today he says the service the shippers are receiving is so much better than they ever got under private control that he now wants the government to hold the roads. He came to Washington to see what could be done about the recent coal car shortage in Kentucky. 'I called on Mr. Hastings, assistant traffic director,' he said, 'and immediately he got on the wire with Atlanta. He directed the Southern Railroad to turn over 500 coal cars to the Louisville & Nashville. When I get back to Kentucky the relief will be under way. Under private control we would have stewed in our own grease before such a thing could have happened.'

"A few weeks ago Clifford Thorne, who represents many of the big independent oil companies, and other considerable shippers in actions before the Interstate Commerce Commission, told the House Committee on Interstate and Foreign Commerce that now is no time to be turning back the railroads; that they should be held for two years following the proclaiming of peace. Mr. Thorne was one of the bitterest critics of the Railroad Administration during the war and one of the first to demand, almost viciously, that the railroads be given back to their owners at the earliest possible moment.

"When you consider that we have never had federal control in its real sense, that we have only had what amounts to a receivership and a loose-jointed one at that, that the morale of the director general's organization has for many months been admittedly low, due to uncertainty as to what is going to happen, don't you think the testimony of such men tells a story which is worth considering in these critical times?"

Valparaiso, Chile's Chief Port

Wheat Shipments to Be Treated as an Emergency Movement

WHEAT WILL BE TREATED as an emergency shipment and given right of way over all other traffic demands in an effort to insure its prompt movement to grain elevators, Director-General Walker D. Hines announced after a conference held on October 16 at Chicago. Julius Barnes, director of the United States Grain Corporation; B. F. Bush, regional director of the Southwestern region; Hale Holden, regional director of the Central Western region; J. E. Gormley, assistant regional director of the Northwestern region; W. C. Kendall, manager of the Car Service Section; Max Phelan, director of the Division of Public Service, and the federal managers of the principal roads in the West and Southwest were present. Following the conference at which the car situation in the Western wheat growing states was fully discussed, Director-General Hines issued the following statements:

"The Railroad Administration is again reviewing the situation today with respect to the movement of this year's wheat harvest from the country to primary markets and other places of storage, has had reported to it the quantities already moved from southwestern states and is impressed with the comparatively small amount of wheat yet to be handled.

"Approximately 20,000,000 bu. of the Texas crops have already been moved, leaving 11,000,000 bu. on farms. The entire movement of wheat last year in Texas was 5,500,000 bu. In Oklahoma, of the total crop of 45,000,000 bu., 33,000,000 bu. have been moved in three months, leaving 12,000,000 bu. yet in the country. Against this movement of 33,000,000 bu. this year, it is to be noted that the total movement of wheat from Oklahoma in twelve months last year was 28,000,000 bu.

"In the entire southwest there have already been moved to market 134,000,000 bu. in the last three months, leaving 99,000,000 bu. on the farm. Against this movement of 134,000,000 bu. so far this year, the total movement for the previous twelve months was 137,000,000 bu.

"In the state of Kansas there have been moved to market 66,000,000 bu. of wheat, leaving 63,000,000 bu. on the farm.

"Notwithstanding the extraordinary transportation of wheat which has already been performed this year, and notwithstanding the heavy demands for transportation by all other sorts of traffic, the Railroad Administration is taking steps to increase still further the handling of wheat. Preference is to be given so as to move wheat that is on the ground, additional equipment is to be provided to relieve the elevators at Kansas City, Mo., and Omaha, Neb., and the various railroads located in the wheat territory are to give additional intensive supervision to the handling of local wheat."

WASTE OF CAR SPACE still constitutes a serious leak. A warning to the shipping public has been issued by K. M. Nicoles, chairman of the San Francisco (Cal.) Terminal Efficiency Committee. Loss of car space in these days means loss of business handled; a matter of concern to the shipper as well as to the carrier. A comparison of the loading for September, says Mr. Nicoles, shows that, in wheat, shippers are using but 95 per cent of car capacity this year, as against 101 last year; in corn and oats, only 77 per cent as against 94; in sugar, 89 per cent as against 106; in canned goods, 96 per cent compared with 100; and in rice, 98 per cent compared with 109 per cent last year. As practically all cars can be loaded to ten per cent above their marked capacity, the loss is seen to be large

General News Department

Advances to railroads by the War Finance Corporation have amounted to $204,794,520; and of this $134,436,310 had been repaid up to November 15, according to the annual report of the secretary of the Treasury; leaving a balance of $70,358,210 outstanding.

The airplane mail carrier who made the regular trip from Washington to New York on Tuesday, December 2, covered the distance of about 218 miles in one hour, 34 minutes, or at the rate of 138 miles an hour; and the load of mail weighed 630 lb. The airplane was a new DeHaviland-4 with twin motors. The start was made from College Park, Washington, at 12 o'clock noon, and the plane arrived at Belmont Park, New York, 1:34 p. m.

Daylight saving and the advantages of the plan are now under discussion in 16 states, according to Marcus M. Marks, of New York City, who says that public sentiment is being crystallized so that these 16 states will be ready by next spring to follow the aldermen of New York City in the adoption of a law to set the clocks forward in 1920 the same as was done in 1919 under the now obsolete federal statute. Mr. Marks thinks that there will be a general movement next year to begin the use of "summer time" a month later than heretofore, and to terminate its use a month earlier.

Prize for Report on Lakewood Trucks

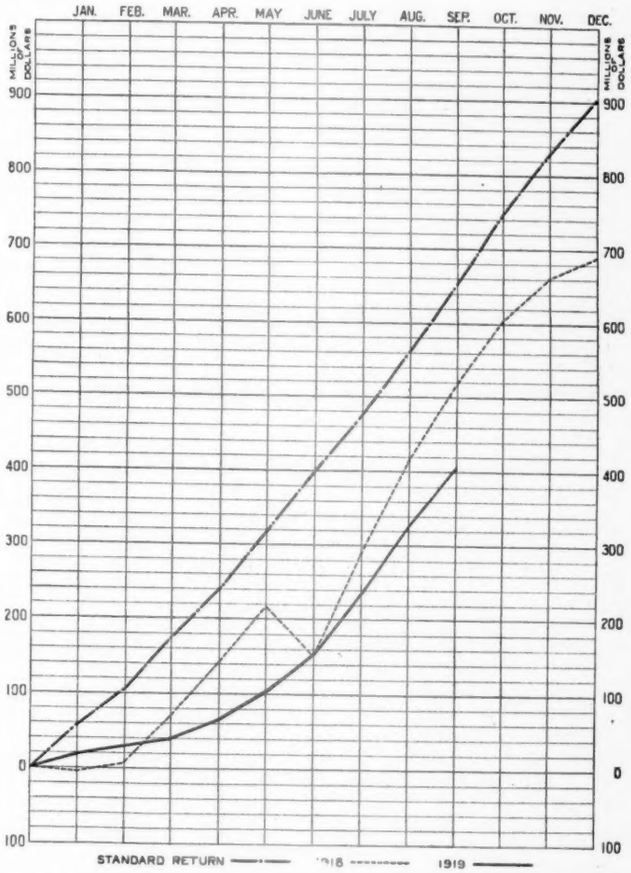
The Lakewood Engineering Company, Cleveland, Ohio, announces prizes of $1,000, $500 and $250 for the three best papers describing experience with the Tier-lift trucks made by that company. This truck, which is of two tons capacity, is propelled by power from a storage battery, and also is arranged to lift its load, by means of its motor, to any height up to 76 in. Papers must be sent to A. R. Bond, Scientific American, New York city, by January 30, and within a month thereafter the awards will be made by a committee consisting of Mr. Bond, Prof. D. S. Kimball, Cornell University, and Irving A. Berndt, New York City.

Kansas City Switchmen Strike

Approximately 1,500 switchmen members of the Brotherhood of Railway Trainmen left their work in the Kansas City terminal district on Saturday, November 29, and returned again on Monday, December 1. Definite reasons for this action were not given, but it is believed that the walkout was due to dissatisfaction over the present wage scale and because the national officers of the brotherhood "failed to get action" on their demands. The ending of the strike immediately followed the sending of telegrams to the governors of Missouri and Kansas by the mayors of Kansas City, Mo., and Kansas City, Kan., and the president of the Kansas City Chamber of Commerce. The messages were sent in compliance with a resolution unanimously adopted at a mass meeting of representative citizens called to discuss measures to meet the serious coal situation in Kansas City resulting from the national coal strike and abetted by the strike of the local switchmen. The strike had already been termed unauthorized by national officers of the Brotherhood of Railway Trainmen and a representative of the national organization attended a meeting of the strikers held on November 30, counseling the men to return to work. The vote was taken at that meeting which resulted in the ending of the strike. The two-day walkout practically paralyzed freight shipping in the terminal yard.

Net Operating Income

The chart made by the Bureau of Railway Economics shows the net operating income of the Class 1 Roads in 1919, compared with the average in the test period (1915-1916-1917) on which government rental is based. The table gives the figures on which the chart is based.



Net Operating Income, Cumulated by Months, 1918 and 1919, Compared with Standard Return, Class I, Railways of United States.

Month	Average net operating income (Standard return) in 3-year test period		Net operating Income earned in 1919		Deficit in 1919	
	By months	Cumulative	By months	Cumulative	By months	Cumulative
January	$56,613,000	$56,613,000	$18,783,702	.....	$37,830,000	.....
February	47,934,000	104,547,000	10,106,268	$28,889,970	37,828,000	$75,658,000
March	68,251,000	172,798,000	10,842,608	39,660,778	57,409,000	133,067,000
April	67 289,000	240,087,000	26,115,214	65,916,807	41.174.000	174,241,000
May	77,385,000	317,472,000	39,462,367	105,215,450	37,923,000	212,257,000
June	82,550,000	400.022.000	52,270,702	157,448.669	30.279,000	242 573,000
July	75.341.000	475,363,000	77,176,933	234,625,602	1,835,933	240,737,067
August	86,860,000	562,223,000	.....	.....	(Increase)	.....
September	91,273,000	653,496,000	.....	.....	.....	.....
October	94,333 000	747,829,000	.....	.....	.....	.....
November	83,536.000	831.365.000	.....	.....	.....	.....
December	73,282,000	904,647,000	.....	.....	.....	.....

Traffic News

Wilson C. Redding, representative at Pine Bluff, Ark., for Arkansas for the Chevrolet Motor Company, has resigned, having been elected traffic manager for the traffic bureau of the Chamber of Commerce of Pine Bluff.

Commutation tickets on the Pennsylvania Railroad for certain long distance journeys must bear the photograph of the holder. This rule goes into effect on December 5 and, according to an announcement of the company, is made necessary because of frequent misuse of tickets between Philadelphia and Trenton (31 miles) and between Trenton and New York (58 miles).

According to a report on overseas traffic for the week ended November 19, made to the director general, 5,442 cars of commercial export freight were received at North Atlantic ports during this period as compared with 912 cars for the same week of 1918. This shows an increase of 4,530 cars, or 496 per cent for November 19, 1919, as against the corresponding period last year. For the week ended November 19, 1919, there were 16,339,185 bushels of grain stored in elevators at North Atlantic ports. There were received during the week 2,940,240 bushels, while 4,912,416 bushels of grain were cleared. The deliveries exceeded the receipts by 1,972,176 bushels. The total amount of grain in elevators at these ports represented 77.7 per cent of the total elevator capacity. There were 8,478,216 bushels of grain stored in elevators at Gulf ports on November 19, representing 82.5 per cent of the total elevator capacity.

Canadian Cars in the United States

The problem of the shortage of cars in Canada has been brought to the attention of the United States Railroad Administration by the Department of Railways and Canals of Canada. The Canadian Railway War Board has advised that department that the following is the status of the Canadian-United States freight car situation:

Canadian box cars in United States	43,661
United States box cars in Canada	21,240
An adverse balance of	22,421
Canadian livestock cars in United States	1,830
United States livestock cars in Canada	158
An adverse balance of	1,672
Canadian refrigerator cars in United States	1,800
United States refrigerator cars in Canada	1,246
An adverse balance of	544

Coal Production

Coal production during the second week of the strike was 33 per cent of normal as compared with 29.4 per cent during the first week, according to the weekly bulletin of the Geological Survey. The output of the seven days, November 9 to 15, including lignite and coal coked, was 3,990,000 net tons, an increase of 438,000 tons, or 12.4 per cent, as compared with the week before. The average production during the four weeks ending October 25 was 12,089,000 tons. As the strike order was withdrawn on the afternoon of November 11, the week contained two days during which the order was in force and four days after it had been withdrawn, but, the report says, production was not resumed during the week on a considerable scale except in scattering districts outside of the central competitive field. The report contains an analysis of operating conditions during the first week of the strike, November 2 to 8, inclusive, but shows that in the central competitive field the strike was practically 100 per cent effective. Virtually no coal was mined in Illinois, Indiana, Michigan, Ohio and the Pittsburgh district. In the tier of states immediately west of the Mississippi the tie-up was also practically complete and from Iowa south of Oklahoma about 99 per cent of the capacity was closed. The closing of so many mines afforded to the others which remained at work exceptional car supply and, thanks to the efforts of the railroads, transportation disability as a limiting factor practically ceased to exist. Only one small district afforded serious shortage of cars and, the report says, there is little doubt that the percentage of loss on account of car shortage for the entire country will be found to be less than 1 per cent.

Commission and Court News

Interstate Commerce Commission

The Commission has declared the Chicago & Calumet River to be a common carrier and, therefore, lawfully entitled to participate in interstate rates with other common carriers, or to have its charges on interstate shipments absorbed under proper tariff provision by the roads having a line haul. The road now serves the Ryan Car Company, the Camel Company, the General Fuel & Supply Company and the Western Steel Car & Foundry Company and is making arrangements with the Koppel Industrial Car & Equipment Company and the Fidelity Storage Company for similar service. The commission has ordered the company to file a tariff for its approval.

Demurrage on Grain

A recommendation of dismissal is made in a tentative report by Attorney Examiner Charles F. Gerry on complaints instituted by the Armour Grain Company, the Minneapolis Traffic Association and others against the railroads arising from the imposition of demurrage on carloads of inbound transit grain at Chicago and Minneapolis during the periods of car congestion in the fall of 1916 and 1917 when the railroads did not furnish enough cars for outbound shipments to keep a steady flow through the transit elevators. Several hundred thousand dollars in demurrage charges is involved, but the tentative report finds that the carriers were not liable for failure to furnish cars under such unusual conditions and that the transportation of transit grain involved two contracts of carriage, of which the first was complied with after proper placement of car and a reasonable opportunity afforded for unloading it.

Illinois Classification

The Interstate Commerce Commission has issued a decision written by Commissioner Meyer on an investigation initiated at the request of the director general, who asked advice as to whether the present Illinois classification and the present class and commodity rates applicable between points in Illinois should be continued in effect. The Commission recommends:

1. That for the rules, descriptions, packing specifications and minimum and estimated weights of the Illinois classification there be substituted the corresponding portions of the consolidated classification, subject to the modifications thereof indicated in Consolidated Classification Case, 54 I. C. C., 1.

2. That the Illinois scale of class rates and ratings applicable thereto under the Illinois classification be canceled; and the Disque scale, governed by the official classification, be substituted therefor and applied between points in the Illinois district south and east of the lines indicated, extending from Chicago through Peoria to St. Louis, Mo.; and that class rates, governed by the contemporaneous western classification, and not higher than the level of interstate rates between points in northwestern Illinois and adjoining states, be substituted therefor and applied between points in the Illinois district on, north, and west of the Chicago-St. Louis line.

3. That a review of particular commodity rate structures be made in order to remove discriminations which now exist or may arise from any readjustments growing out of these recommendations.

4. Specific recommendations made with respect to commodity rates on certain articles.

Commission Reduces Rate

Initiated by Director General

The Interstate Commerce Commission in the case of the Solvay Process Company vs. Delaware, Lackawanna & Western has decided that an increase from 17 cents a long ton to 30 cents a net ton in the rate on limestone, c. l., from Jamesville, N. Y., to Solvay, N. Y., made by the Railroad Administration in connection with its general rate advance in 1918 was unreasonable

in itself in spite of the general need of the Railroad Administration for increased revenues; and that a rate in excess of 25 cents a long ton is unreasonable. Reparation is awarded from June 25, 1918, at which time the rate was increased to 40 cents a long ton, although it was reduced to 30 cents a net ton on September 16, 1918. The case has attracted interest because the Secretary of Commerce took part in it, was represented at the hearing and filed a brief supporting generally the contentions of the complainant, but urging also the power and primary duty of the Railroad Administration to foster and protect commerce, with only secondary regard to the adequacy of rates as sources of revenue. He differentiated in this regard between federal and private control, pointing to the fact that the Railroad Administration was given the support of public funds derived from general taxation. He urged also the importance of relieving complainant's traffic from any unnecessary burden in view of the utility of its products and their wide distribution. However, in considering its powers and duties under the federal control act, in reviewing the rates initiated by the director general, the commission has concluded that the words "just and reasonable" as used in that act have substantially the same meaning as in the act to regulate commerce, from which they are drawn, and the case was decided upon the facts of record pertaining to the particular rate involved. The director general filed formal answer denying any violation of law, but was not represented at the hearing. The defendant carrier offered no denfense of the 40 cent rate, but in defense of the 30 cent rate cited the act of August 29, 1916, the President's proclamation taking over the railroads, the federal control act, and General Order No. 28. "These recitals tend, however," the commission says, "to justify the rate increases under that order as a whole and not necessarily the increase in every rate. When General Order No. 28 was promulgated, an immediate increase of revenue was doubtless deemed imperative. It is not, however, to be presumed that there was any intent permanently to abandon the standards by which the rights of individual shippers had been determined during a period of peace. It is rather to be presumed that the constituted authorities had in contemplation ultimate readjustment in cases where the universality of their methods might be shown to work undue hardship upon particular shippers." The commission, therefore, found it unnecessary to consider the justification for the general increases in rates, but said that the question concerns the specific increase applied to what is an almost unique movement of this particular traffic.

Court News

Safety Appliance Acts

The New York Supreme Court, Trial Term, Erie County, holds that the federal Safety Appliance Acts requiring that cars engaged in interstate commerce shall be "equipped with couplers coupling automatically by impact, and which can be uncoupled without the necessity of men going between the ends of the cars," does not apply to a defect in the timber bolted to the car frame, to which timber the drawbar was fastened. The purpose of these acts is to relieve railroad employees from the necessity of going between the ends of cars and the couplers. The supplementary act of 1916 does not extend the carriers' liability for defects in couplings outside of the statutory requirements. It is an extending act only in declaring that carriers shall not escape liability to employees for the reason that cars not meeting with statutory requirements are being moved for repair. This is the first time this particular question has been passed upon by the courts.—Buschalewski v. N. Y. C., 173 N. Y. Supp. 506.

United States Supreme Court

"Knowingly" Accepting a Rebate

The Lehigh Coal & Navigation Company was convicted and fined in the district court of New Jersey for accepting rebates and concessions from the Central of New Jersey in violation of the Interstate Commerce law. A case was certified to the Supreme Court of the United States on the following facts: When the coal company leased its railroad, the Lehigh & Susquehanna, to the Central in 1871, covenant 10 of the lease provided that on coal shipped by the company at the northern end of the Nesquehoning tunnel the rates should not exceed those on coal from the Lehigh region, from Penn Haven to the same points, either by the Central or by the Lehigh Valley. In August, 1906, and thereafter the tariffs filed by the Central contained a footnote providing that in compliance with this covenant, a lateral allowance was made to the coal company on all anthracite originating on its tracks in the Panther Creek, Nesquehoning and Hacklebarnie districts mined and shipped by it, when coming via the Hanto, Nesquehoning, and Mauch Chunk gateways. All subsequent tariffs, 262 in number, contained the foot note. The allowance was 19.18 cents a ton, and this was credited in the monthly settlement of the company's account with the railroad. This credit was the point of the government's attack.

The certificate asked the following question: "In the criminal prosecution of a shipper for knowingly accepting transportation at less than the duly established rate by receiving an allowance that was referred to in the tariff but was not specified in figures therein, has the defendant a right to offer in evidence that the allowance was received under the honest belief that it was lawfully established by the tariff, and under the honest belief that in receiving it he was not disregarding what he believed to be the provisions of the tariff, but was complying therewith?" The Supreme Court answers the question in the affirmative. There was no misunderstanding of the law, or of what it required. The misunderstanding was induced by practice and the opinion of those in authority that the act was complied with, and a tariff was filed. The word "knowingly" in the statute required to incur the guilt of a misdemeanor by accepting a rebate was therefore to be given exculpating effect.—Lehigh Coal & Navigation Co. v. United States. Decided November 10, 1919.

Rear End Platforms—Mail Cars
State and Federal Legislation

Complaint was made to the Pennsylvania Public Service Commission that the Pennsylvania Railroad ran a specified train in interstate commerce, the last car of which was not equipped at its rear end with a platform thirty inches wide, guard rails and steps, as required by a Pennsylvania statute of 1911. The railroad contended that it was not bound by the statute because the rear car was a mail car constructed in accordance with the regulations of the Post Office Department, and because the Federal Government had assumed control of the matter so far as to exclude such intermeddling on the part of a state. The Commission and the State Superior Court decided against the railroad.

The Supreme Court of the United States has now reversed that decision. The court says, by Mr. Justice Holmes, that if all that had been done on behalf of the United States in the way of regulation had been to determine how mail cars should be built, and to exclude a thirty-inch platform, it might be said that the state law could be obeyed by putting a different car at the end of the train. It would be a tax upon the railroad when it wished to run a mail train wholly made up of mail cars; but it could be done. But when the United States has exercised its exclusive powers over interstate commerce so far as to take possession of the field, the states no more can supplement its requirements than they can annul them. In the present instance the rules for the construction of mail cars, admitted to be valid, not only exclude the wide platform, but provide an equipment for them when used as end cars. The Safety Appliance Act, with its careful requirements for the safety of the men was followed by most elaborate regulations issued by the Interstate Commerce Commission, which include three large pages of prescriptions for "Caboose Cars Without Platforms." Caboose cars constantly are used as end cars and these pages, like the Post Office order as to mail cars, recognize the lawfulness of an end car such as the Pennsylvania statute forbids. "The subject matter in this instance is peculiarly one that calls for uniform law and in our opinion regulation by the paramount authority has gone so far that the statute of Pennsylvania cannot impose the additional obligation in issue here. The Interstate Commerce Commission is continually on the alert, and if the Pennsylvania law represents a real necessity, no doubt will take or recommend steps to meet the need." Mr. Justice Clarke dissented, being of the opinion that the United States had not taken possession of the field involved in this controversy.—Pennsylvania Railroad v. Public Service Commission. Decided November 10, 1919.

Foreign Railway News

The contract awarded by the German Government to the Krupp Works for the construction of rolling stock is reported by the United States commercial attache at The Hague, as calling for 2,000 freight cars, of 15 tons capacity, and 100 locomotives each year. It is said that the contract stipulates that the price must correspond to costs of material and labor and that the factory shall make a profit of only two per cent.

Underground Railway for Marseilles

The Marseilles Municipal Council has decided to proceed with the construction of an underground railway in the city, a project which has long been in contemplation in view of the ever-increasing congestion of the streets.

Prussian Railways Deficit

For 1919 the deficit on Prussian railways amounts to 634,000,000 marks (nominally $158,500,000), of which 160,000,000 marks ($40,000,000) goes to cover indemnities for railway thefts. The total working expenses for the year will amount to 7,500,000,000 marks (nominally $1,875,000,000).

Oil Fuel on the Central Uruguay

The directors of the Central Uruguay Railway, in its annual report, say that having regard to the present high prices and the difficulty in obtaining coal and wood, the board has made arrangements to extend the use of fuel oil, and has contracted for supplies to be delivered during the next two years.

Cost of the Eight Hour Day on the Underground

LONDON.

In the cost of the eight-hour day on the London omnibus services, tramways and railways operated by the Underground, an additional expenditure is incurred of approximately £700,000 ($3,500,000) per annum. An addition of about 20 per cent to the staff is required to work the services.

Uruguay East Coast Railway Sale

Cable advices have been received in London from the general manager in Uruguay of the Uruguay East Coast Railway Company, Limited, that the sale and transfer of the railway to the Uruguayan Government was completed on October 15 of this month, the sale and transfer to take effect as from October 1, 1919.

Argentine Railway Projects

Buenos Ayres advices state that the Chamber of Deputies is shortly to discuss a project which will authorize a French company to construct a railway across the Federal territory of Formosa to an extent of 300 kilometres. It is understood that several deputies intend strenuously to oppose this project, with the object of giving preference to a company which has been formed with Brazilian, Argentine and North American capital.

English Railway Earnings

The British Board of Trade Journal, reporting revenue and expenditure of railways of great Britain and Ireland for the years 1916, 1917 and 1918, shows that the average rate of dividend for the first time during the war exceeded the 1913 average of 3.63 per cent. For 1918 the figure given is 3.70 per cent. The total receipts again increased, but the per cent of expenses was greater than in the previous year (the proportion in 1914 was 63 per cent):

	1916	1917	1918
Total receipts, thousands	£154,468	£168,721	£197,293
Expenditure, thousands	102,520	115,994	143,342
Net income	51,948	52,727	53,951
Per cent of expenses	66	69	73

London Subway Officials Visiting America

LONDON.

A. R. MacCullum, assistant to the mechanical engineer of the underground lines in London; C. J. Spencer, manager of the London and Suburban group of tramways, and Frank Peck, commercial manager and C. J. Spence, engineer of the London General Omnibus Company, are visiting the United States to make a close study of the present day traffic and transport conditions in New York and other principal cities.—Modern Transport.

Nationalization of Mines Demanded in England

An extract from an article in the London Times states that by an almost unanimous vote on September 10, the Trades Union Congress declared its readiness to cooperate with the Miners' Federation of Great Britain to the fullest extent with a view to compelling the government to adopt the scheme of national ownership and joint control recommended by the Coal Industry Commission. The figures were as follows: For the resolution, 4,478,000; against, 77,000; making a majority in favor of the resolution of 4,401,000.

Railway Extensions in Jamaica

LONDON.

The Times Trade Supplement states that the question of railway extensions in Jamaica is attracting a good deal of attention. At present the total length of the Jamaica railway is 1,970 miles. The island is 4,450 sq. miles and the population in 1916 was 892,406. It is stated that there is a project to extend the railway and that a scheme had been projected to electrify the railway and thus do away with steam haulage. The waterfalls in Jamaica should make this possible. Trinidad had mapped out its railway extension program, and the new work will involve an expenditure of upwards of $10,000,000.

Trade with Germany

LONDON.

About 18 months ago the Textile Trade section of the London Chamber of Commerce passed a resolution deciding to have no trade relations with Germany for at least 10 years. On Wednesday, October 29, the mover of that resolution proposed, at a meeting of the section, another resolution to exactly the opposite effect, expressing the opinion that resumption of business with Germany and other enemy countries should be regarded as properly open to members of the section. Consideration of the motion was deferred for a week.—London Times Trade Supplement.

High Cost of Fuel in South America

LONDON.

An extract from the Engineer states that Follett Holt, M.I.C.E., the chairman of the Entre Rios Railway of Argentina, speaking at the annual meeting stated that the fuel bill has absorbed 23 per cent of the total expenses of the company, and it was now seriously considering the oil fuel question. It had under construction an 8,000 tons capacity oil plant and would use oil fuel for the locomotives and ferry steamers. He states that during the past few years all the South American railways had been bled almost to death by coal prices, and that the market for some million tons of coal in South America was in danger of being lost to England.

Locomotive Building in England

LONDON.

The first locomotive to be built by Sir W. G. Armstrong, Whitworth & Co., Ltd., at its Scotwood works, was tested on November 12. This engine is a main line 0-8-0 superheater locomotive with a 6-wheel tender for the North Eastern. At the date of the armistice the Scotswood works were entirely devoted to the production of munitions. Large quantities of shells of every calibre, from the smallest to the giant naval projectile of over a ton weight, were reproduced; the output during the period of hostilities reaching the total of 14,500,000 shells, in addition to vast number of cartridge cases, fuses, etc. These works were selected for the manufacture of locomotives and a remarkable transformation has taken place. A large task was involved

in clearing away the quantities of shell machinery and in reorganizing and equipping the shops for locomotive manufacture. It is reported that this plant will employ 3,000 men and produce one finished locomotive per day.

The War and Indian Railways

LONDON.

An abstract from the Times engineering Supplement states that the pressure of the Mesopotamian, East African and other distant campaigns on India's still very inadequate railway resources may be gaged to some extent from official statements made in the Viceroy's Legislature last month.

The materials belonging to Indian railways sent out of the country for war purposes included 774 miles of new and second hand rails, 217 locomotives and 5,423 vehicles. Of the rolling stock 196 locomotives and 4,908 vehicles were meter gage. The other materials sent were varied in character and very large in quantity. Before the cessation of hostilities the replacement of 157 meter gage locomotives and 2,500 vehicles had been arranged.

Motor Vehicles as Feeders to Italian Railroads

The use of motor vehicles as feeders to the railroads is said to be more extended in Italy than in any other country in the world. This is owing to the fact that Italy is a mountainous country in which railroad lines can only be built at considerable cost and labor. The total length of railroad lines in Italy is 8,700 miles, while the length of routes over which motor services are run with a fixed time table is 8,070 miles. There are 400 of these lines over which regular public services are run either as feeders to the railroad or in order to open up country which has remained inaccessible to the railroad.

These public automobile services for goods and passengers were begun in a small way ten years ago in order to meet the deficiencies of the railroad system.

Traffic Between Italy and Germany

LONDON.

The London Times Trade Supplement says that Italy and Germany have entered into an agreement with a view to re-establishing traffic between them through Switzerland. Passenger and freight traffic already have thus been reopened, though subject to certain restrictions. This is of great economic significance for Italy because of the abnormal exchange rate, German goods can now be bought by Italians at 60 centesimi the mark, as compared with more than double that rate under pre-war conditions.

Italy is struggling for the life of her industries. Many trains are not running for lack of fuel, and if it were not for the receipt from Belgium of 2,000 tons coal daily, Italy would be in great distress.

American Imports and Exports Into France

LONDON.

The Fortnightly Information Review of the American Chamber of Commerce give the imports into France from America as follows for the first seven months of the years 1919, 1918 and 1917:

	1919	1918	1917
Machines and machinery..	Fcs.320,824,000	Fcs.202,748,000	Fcs.291,631,000
Tools and hardware.....	*142,996,000	123,995,000	327,259,000

*This figure includes the quantities imported to regularize the imports made in 1918 for the Government.

The exports from France into the United States for the same period are as follows:

	1919	1918	1917
Machines and mechanical appliances.	Fcs.786,000	Fcs.223,000	Fcs.497,000
Tools and manufactures of metal....	444,000	542,000	892,000

The English Steel Strike

The steel strike was caused in England through the skilled men employed in the steel works at Ebbw Vale and Dowlais asking for a certain minimum which the employers could not see their way to accede. As a result of the demand put forward by about 200 men, who struck to enforce it, between 4,000 and 5,000 other workers have been put out of work. A conference held at the Ministry of Labor between Sir David Shackleton and the Engineering Employers' Federation, to enable the latter to state their views on the consolidation of present earnings, including war advances, into permanent rates of wages and the stabilization of existing wages. Representatives of the Trade Unions have submitted a general claim for stabilization until November, 1920, which would necessitate an extension for another year of the Wages (Temporary Regulations) Act. The employers are pressing for certain amendments and conditions if the Act is renewed. The Minister of Labor has promised to consult the government, and the position will probably be further discussed with the parties concerned.

England's Export of Railway Material

LONDON.

According to the Board of Trade Returns, the value of railway material exported during the first eight months of the present year was as follows:

	1919	1918
Locomotives	£675,403	£900,987
Rails	1,246,608	381,104
Carriages	324,168	443,423
Wagons	907,465	210,166
Wheels and axles	438,246	247,650
Tires and axles	638,876	402,760
Chairs and metal sleepers	177,812	88,397
Miscellaneous permanent way	533,106	418,356
Total permanent way	1,986,414	895,530

The weight of rails exported was 77,694 tons, as against 20,899 tons for the same period in 1918, and of chairs and metal sleepers 10,875 tons, as against 5,610 tons last year. Locomotives to the value of £63,767 and rails £38,930 were sent to India during the month of August.

Electrification of the North Eastern Railway

LONDON.

The directors of the North Eastern Railway have provisionally sanctioned a scheme for the electrification of the main line between York and Newcastle (a distance of 80 miles). The scheme provides also for the electrification of the loop line (31 miles in length) from Northallerton to Ferryhill via Stockton. On these portions of the railway there is a very heavy and varied traffic, ranging from East Coast and other important through trains to local freights. Hitherto the experience of the company with electric traction has been confined to the working of a dense local passenger traffic on Tyneside, between Newcastle, North Shields, Tynemouth and Whitley Bay, and of the coal traffic between Shildon and Newport (Middlesbrough). No other company in Great Britain has, however, experimented with the electric haulage of freight trains.

On Tyneside the third rail system is in use, but between Shildon and Newport overhead electrical equipment has been adopted. The new proposal is a combination of the third rail and overhead systems, and the general idea is that the former should be used on the running lines, and the latter adopted in the freight yards and at large stations.

Railway Reconstruction in Patagonia

LONDON.

The London Times Trade Supplement says that the recent blockading on the Transandine line (Buenos Ayres to Valparaiso), on account of snowstorms blocking the Uspallata Pass, has again brought forward suggestions for a new transcontinental line in South America. The most immediately practical idea is that necessitating the construction of only 175 miles of railway, and even though this includes the crossing of the Andes, the height to be negotiated does not exceed 6,000 ft. By this means the line would be free from danger of blocking through snow blizzards, and that the expense and difficulties connected with railways constructed to climb higher altitudes would be obviated.

The transcontinental line in existence at present in South America is the Buenos Ayres-Valparaiso railway, about 1,030 miles in length, crossing the Andes at a height of 10,470 ft., the Andean section of this line being of a gage different from that of the railways of Argentina and Chile, which on either side complete the link, and necessitating three handlings of freight on each through journey. Completion of the new route would mean the creation of a second sea-to-sea railroad, over an all broad gage line (5 ft. 6 in.), traversing ascents of such easy grade that no rack sections would be necessary.

Supply Trade News

F. W. Sinram, general manager of the **Van Dorn & Dutton Company,** gear specialists, of Cleveland, Ohio, has been elected president of the company. Mr. Sinram is also president of the American Gear Manufacturers' Association.

Fairbanks, Morse & Co., Chicago, have purchased a lot 300 ft. by 150 ft. in the central manufacturing district of that city for the purpose of erecting a new warehouse, to cost $15,000. It will be of brick and concrete, three stories and a basement.

The Sherwin-Williams Company, Cleveland, Ohio, is contemplating the erection of a factory at Kansas City, Mo., to cost $500,000. The first unit will be equipped for the manufacture of paint and will be followed by the construction of a varnish factory.

M. M. Drake, sales manager for the Deeming-Endsley Company, Chicago, with headquarters in that city, has been appointed manager of the railway supply division of **The Pierce Company,** Kansas City, Mo., with office in the Transportation building, Chicago.

R. E. Trout, who has resigned as signal engineer of the St. Louis-San Francisco, to become general sales manager of the primary battery division of **Thomas A. Edison, Inc.,** with office at Bloomfield, N. J., as was announced in our Emergency Bulletin of November 6, was born at Miles Grove, Pa., now North Girard, on August 18, 1874. He began his railway career in 1892 with the Union Switch & Signal Company, Swissvale, Pa., as an apprentice in shop and construction work. He entered the service of the Michigan Central in 1896 as construction foreman and signal inspector. In 1898 he returned to the Union Switch & Signal Company, in charge of the installation of an electro-pneumatic interlocking plant at the South Station, Boston, Mass. In 1900 he was appointed signal inspector on the New York, New Haven & Hartford, with office at Providence, R. I. Mr. Trout again returned to the service of the Union Switch & Signal Company in 1901 as inspector of material and construction work. From May, 1902, to July of the same year he was connected with the signal department of the Chicago & Alton. On the latter date he was appointed signal engineer of the St. Louis-San Francisco, which position he held until his recent appointment. Mr. Trout has been a vice-president of the Railway Signal Association and later became president, which position he held until that association became the Signal Division of the Engineering Section of the American Railroad Association, at which time he was elected chairman of the Signal Division.

R. E. Trout

The business and property of the **O. S. Walker Company,** Worcester, Mass., manufacturers of grinding machines and magnetic chucks, has been sold by Oakley S. Walker to a group of men prominently connected with the machine tool and supply business, and the reorganization of the company has been completed. The name of the company will remain unchanged and the new officers are: President, **W. B. McSimmon,** Boston; vice-president, **J. H. Drury,** Athol; general manager, secretary and treasurer, **Clayton O. Smith;** the third director being **William F. McCarthy, Boston.** The new ownership brings with it increased financial resources which will make possible future development and increase of the business. The company manufactures grinding machines of various types and magnetic chucks used in holding iron and steel parts while they are being ground or machined.

C. F. Neudorfer, general plant superintendent for the Standard Tank Car Company, Masury, Ohio, has been promoted to general manager, a position which has been vacant for some time. **N. L. Mabey,** chief engineer, becomes assistant general manager. **Frederick Burroughs,** chief estimator, has been made chief engineer, and **J. W. Todd,** assistant chief engineer, has been appointed assistant purchasing agent in the office of the superintendent of transportation. **J. T. O'Connor,** superintendent of transportation, has been appointed purchasing agent. **J. R. Sweeken** succeeds Mr. O'Connor as superintendent of transportation.

E. L. Chollman, whose election as vice-president and sales manager of the **Paxton-Mitchell Company,** Omaha, Nebr., was announced in the *Railway Age* Emergency Bulletin of October 13, was born at Omaha, Nebr., on August 5, 1877. He entered railway service in 1892 as a machinist's apprentice on the Union Pacific at its Omaha shops. From 1897 to 1901 he was machinist on various railroads and from 1901 to 1902 was roundhouse foreman on the Union Pacific, with office at Evanston, Wyo. In 1902 he was appointed assistant general foreman at Cheyenne, Wyo. From 1903 to 1904 he was master mechanic for the La Follette Coal & Iron Railway Company, La Follette, Tenn. In the latter year he was appointed general foreman on the Southern, with office at Alexandria, Va. In 1905, he was appointed general foreman at Danville, Va., and in 1906 was transferred to Greensboro, N. C., which position he held until 1909, when he was appointed superintendent of car shops at Knoxville, Tenn. In July, 1914, he was elected vice-president of the Southern Locomotive Valve Gear Company, Knoxville, Tenn., a position which he held until his recent election as vice-president and sales manager of the Paxton-Mitchell Company.

E. L. Chollman

The **American Steel Foundries,** Chicago, in its report for the year ending September 30, 1919, shows a decrease in surplus over the corresponding period in 1918 of $144,150. The decrease in net earnings before taxes, the statement shows, is $2,823,232. The comparative income account is as follows:

	1919	1918
Net earnings	$3,751,696	$6,858,017
Depreciation	210,826	305,860
Balance	$3,540,870	$6,552,157
Other income	330,118	142,063
Total income	$3,870,988	$6,694,220
Charges	*165,302	117,497
Federal tax reserve	1,243,113	3,970,000
Surplus	$2,462,573	$2,606,723

*Includes $122,739, net earnings subsidiary companies applicable to stocks not owned by American Steel Foundries.

The International Cement Corporation has been incorporated under the laws of Maine, with headquarters at New York. It is a consolidation of the Cuban Portland Cement Corporation, with properties in Cuba, the International Portland Cement Corporation, with properties in Argentina, the Compania Uruguaya de Cemento Portland, with properties in Uruguay, and the Texas Portland Cement Company, operating two plants in the United States, one at Dallas, Tex., and the other at Houston, Tex. The directing heads of the

International Cement Corporation are **F. R. Bissell,** chairman of the board of directors, and **Holger Struckman,** president and general manager.

Harry M. Giles, who has been appointed general superintendent of the South Philadelphia works of the Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa., as was announced in our Emergency Bulletin of October 13, has risen from the ranks in the Westinghouse organization, having for a number of years been superintendent of marine erection. He was born in Boothby, Me., on March 23, 1869, and when a small boy his parents moved to Providence, R. I., where he received his schooling. Leaving high school, he went to work at an early age in the shops of the Corliss Steam Engine Company. While working he took a night course in the Rhode Island School of Design and later received private instruction in mechanics, kinematics and mathematics. In 1900 he became superintendent of Corliss engines with the Westinghouse Machine Company, a position he held until the company became a part of the Westinghouse Electric & Manufacturing Company.

Huntley H. Gilbert, who has been appointed manager of sales, Western district, of the **Pressed Steel Car Company** and the **Western Steel Car & Foundry Company,** with offices at 425 Peoples Gas building, Chicago, Ill., as was announced in our Emergency Bulletin of October 20, graduated from Cornell University in June, 1907, with degree of mechanical engineer. He then was in the employ of the Illinois Steel Company at its South Works and later served as sales agent of the Scully Steel & Iron Company and then as western representative of the George E. Molleson Company. He entered the employ of the Pressed Steel Car Company in June, 1912, as sales agent in the Chicago office and in 1915 was sent to England and France as special representative to investigate the manufacture of shell forgings. In July, 1917, he was commissioned captain in the Ordnance Officers Reserve Corps and reported for duty July 25, 1917, as assistant to the chief of the Field Artillery Section, Carriage division, Ordnance Department, serving in Washington until February, 1918, when he was transferred to the Rock Island Arsenal, serving there as executive assistant to the commanding officer, later administrative officer, and on July 25, 1918, he was promoted to major. He attended the October, 1918, staff class at the War College, and was then appointed division ordnance officer, 97th Division, Camp Cody, N. M., serving there until the division was demobilized, at which time he was honorably discharged from military service. In January, 1919, he re-entered the service of the Pressed Steel Car Company and Western Steel Car & Foundry Company as assistant manager of sales, Western district, and was recently promoted to manager of sales of the same district.

H. H. Gilbert

Lieutenant Vernon S. Henry, who has re-entered the service of the **Safety Car Heating & Lighting Company,** New York, and is now connected with the Philadelphia office as a sales representative, as was announced in our Emergency Bulletin of October 13, is a graduate of Stevens Institute of Technology. At the outbreak of the war he attended the first training camp at Fort Myer, Va., and received his commission as first lieutenant in August, 1917. He went to France the following November and was in charge of automatic rifles in the A. E. F., remaining there until May, 1918. He then returned to the United States to assist in the production of machine gun tripods, model 1919, and for his development in this work he afterwards received a citation for meritorious and conspicuous service. In 1918 he returned to France and was in charge of the development of machine gun and anti-aircraft material until discharged from the service in February, 1919.

Reorganization and Expansion of the Reading Iron Company

The Reading Iron Company, Reading, Pa., manufacturer of wrought iron pipe, is undergoing reorganization under the direction of **L. E. Thomas,** the newly elected president, who succeeded F. C. Smink. Mr. Thomas was formerly vice-president and general manager of the Birdsboro Steel Foundry & Machine Company. He has had a broad and varied experience in the iron and steel business, having held several important operating positions in the Ohio works of the Carnegie Steel Company, and, later, while identified with the United Engineering & Foundry Company, installed some of its equipment in the leading steel plants of this country. For 14 years he was vice-president and general manager of the Birdsboro Steel Foundry & Machine Company.

L. E. Thomas

W. Woodward Williams has been appointed general manager of the company to succeed George Schuhmann, who retired on August 1, 1919, on account of ill health. Mr. Williams formerly served with the A. M. Byers Company, Pittsburgh, as general sales manager and general manager. Craig Geddis has been appointed advertising manager. He was formerly connected with the sales and publicity departments of the National Tube Company, and later was publicity manager for the Mesta Machine Company. Edgar F. Blessing has been appointed metallurgical engineer and W. E. Dunham production engineer. Mr. Blessing was formerly connected with the Doehler Die Casting Company, Brooklyn, N. Y., and Mr. Dunham was, until recently, service manager for the A. M. Byers Company.

W. W. Williams

The Reading Iron Company has also bought the George B. Lessig Company plant at Pottsdam, Pa., giving the Reading Iron Company an additional monthly muck bar capacity of 2,600 tons. It has also bought from the Empire Steel & Iron Company ten acres of land adjoining its tube works for use in future extensions. Branch offices for the district sales representatives have been established at New York, Philadelphia, Pa., Pittsburgh, Chicago, Dallas, Texas and Cincinnati, Ohio. Additional branches are now being located and will be opened by the company in the future.

Trade Publications

CONCRETE PIPE.—The American Concrete Pipe Association, Chicago, has issued an illustrated bulletin on the manufacture, use and testing of concrete pipe for culverts, drains, pressure pipes and sewers. The illustrations show almost every phase of this important industry.

CURTAIN FIXTURES.—Bulletin F-1, published by the Curtain Supply Company, New York, describes and illustrates the action of the ring curtain fixtures developed by this company and contains sketches showing standard types of open and enclosed grooves to aid in selecting the proper style of ring fixture.

STORAGE BATTERY CARS.—Bulletin No. 106, describing Edison equipped railway storage battery cars, mention of which appeared in these columns in the September 26 issue, was published by the Railway Storage Battery Car Company and not by the Edison Storage Battery Company, as incorrectly stated.

EDISON PRIMARY BATTERIES.—Batteries for electric lighting of railroad signals are described in a handsome eight-page pamphlet issued by Thomas A. Edison, Inc., Bloomfield, N. J. The pamphlet contains also a handsome portrait of Mr. Edison and a brief sketch of the history of incandescent lamps since he made the first one on October 21, 1879.

ASBESTOS.—The Magnesia Association of America, Philadelphia, Pa., is now publishing a monthly booklet, which is devoted to the interests of the asbestos and magnesia industries. The magazine is known as "Asbestos" and contains information regarding market condition and prices, and articles on subjects of special interest to users and manufacturers of asbestos and allied products.

VALVE FACING TOOLS, ETC.—An illustrated catalogue and price list of valve facing tools, ball check valves, solid and hollow balls, pneumatic tube welding machines, ball finishing tools for repairing superheater ball joints, pneumatic locomotive turntable motors, etc., products of the Draper Manufacturing Company, Port Huron, Mich., has been issued by this company and is known as Catalogue No. 7.

PULVERIZED COAL FOR LOCOMOTIVES.—The Fuller Engineering Company, Allentown, Pa., describes its equipment for burning pulverized fuel on locomotives in Bulletin No. 21. Figures are given covering the cost of drying and pulverizing coal and of installing a pulverizing plant. The advantages of this method of firing locomotives are described and sectional drawings show the equipment applied to locomotives.

A SHOCKLESS CROSSING.—The Alexander Railroad Crossing & Equipment Company has issued an illustrated folder describing the Alexander crossing and pointing to the satisfactory results secured with this construction on various railroads during the last 10 years. Vibration charts are also shown illustrating the marked reduction in the vibration secured by the use of Alexander crossings as compared to other types.

PROCESS METAL.—The Robertson Company, Pittsburgh, Pa., formerly the Asbestos Protected Metal Company, has issued a small pamphlet on the use of the Robertson process metal or steel plates, sheets, and shapes, covered with a coating of asphalt, asbestos and water proofing. Illustrations and descriptions tell how this material is used for roofing, sheathing, ventilators, window sash, skylights and many other purposes.

FANS, BLOWERS AND EXHAUSTERS.—The various types of blowers, exhausters and fans manufactured by the Buffalo Forge Company, Buffalo, N. Y., are described in catalogue No. 400, with illustrations and tables of specifications. Diagrams and illustrations of countershafts designed for use with these blowers and exhausters are shown, together with dimensions and price lists. This booklet, consisting of 35 pages, contains information of special value to fan users.

STEEL WINDOWS.—The Truscon Steel Company, Youngstown, O., has issued a complete new catalogue on its line of steel sash windows including pivoted, continuous and balanced sash, with photographs of typical installations. Most of the space is given to large-scale cross sections of the varied applications of this construction in a manner that gives the architect all the information necessary to prepare a complete working layout.

VULCAN SOOT CLEANER.—Bulletin 541, issued by the Vulcan Soot Cleaner Company, Du Bois, Pa., contains a discussion of the merits of the Vulcan patented diagonal method for cleaning soot from the tubes of horizontal water tube boilers, covering such features as maintenance cost and first cost, accessibility for inspection and repairs and ease of installation and cleaning. Illustrations in two colors show typical designs as applied to horizontal water tube boilers with vertical baffling. The bulletin also contains an analysis of the cost of Vulcan cleaners and their value as investments.

WHITING RAILROAD EQUIPMENT.—The Whiting Foundry Equipment Company, Harvey, Ill., has prepared catalogue 145, containing 36 pages, to show the advantages and labor saving features of the various railroad specialties manufactured by this company. The equipment described in this catalogue consists of screw jack locomotive and coach hoists, transfer tables for locomotives and coaches, cranes, and turntable tractors. For those contemplating new shops a drawing of a modern shop layout, showing the most practical and economical arrangement of the equipment, is included.

BOILER FEED CONTROL.—An eight-page bulletin, embodying specifications for the Copes system of boiler feed regulation, has been published by the Northern Equipment Company, Erie, Pa. A cover is provided with punched holes for adding future bulletins or specifications that will be published by the company. The bulletin discusses the principle and operation of the regulator and its mechanical construction, heat storage, reduction of furnace temperature fluctuations on sudden load changes, service performance, and the Copes steam pump governor. It contains a number of charts and photographs.

FEEDWATER HEATER.—Bulletin 5 of the Locomotive Feed Water Heater Company, New York, is a complete treatise on the application and operation of the Type E locomotive feedwater heater developed by this company. A colored chart shows how the heater performs its functions and is arranged to show in a graphical manner just where all of the heat that comes from the burning coal on the grates of the locomotive is distributed and its amount at various points throughout the route between the fuelbed and the top of the stack. A sectional drawing shows the arrangement of the equipment on a locomotive, with all pipe connections.

AUTOMATIC CUT-OFF VALVES.—The Lagonda Manufacturing Company, Springfield, Ohio, in catalogue S-2 describes the Lagonda automatic cut-off valves for power plants, which are designed to close automatically in case of an abnormal flow of steam in either direction through the valve. The booklet contains an account of tests made by the Department of Commerce of the United States to determine their reliability of operation and adaptability for different conditions. External dashpot valves for use when the flow of steam from boilers to the header is practically constant, and internal dashpot valves for installation where load conditions are unsteady are fully described, with illustrations showing sectional views of the various classes. Lagonda non-return valves which close in case of tube rupture or an accident to the boiler are also covered in the catalogue, which contains 32 pages.

FUEL OIL.—This is the title of a 46-page booklet published by the Tidewater Oil Company, New York, which gives a brief survey of experiences of various users of fuel oil and gas oil, and is intended to be of service not only to non-technical executives and plant managers, but also to plant engineers. It contains many charts, diagrams and illustrations and is divided into 15 chapters. The following chapter headings will give some idea of its contents: Advantages of Fuel Oil Over Coal; the Nature and Refining of Crude Oil; Greater Economy of Heavy Over Light Fuel Oils; Results Obtained Where Fuel Has Been Changed from Coal to Oil; Installation, Burner and Furnace Requirements. Under the heading, Estimating the Saving, Fuel Oil vs. Coal, a formula is given for computing roughly the amount which a particular plant can afford to pay for oil as computed from the present price of coal firing.

Railway Financial News

CHICAGO, PEORIA & ST. LOUIS.—Chellis A. Austin, president of the Mercantile Trust Company of New York, is chairman of a committee formed to act for the holders of Chicago, Peoria & St. Louis equipment 6 per cent notes due November 1, 1919, for the payment of which no provision has been made. Notes of this issue maturing a year ago were purchased by the Railroad Administration and the interest thereon paid by it, but the Railroad Administration has declined to act similarly in regard to this year's maturity. The receiver for the road has no means with which to pay the notes. The committee states that the equipment securing the notes appears to have a present value largely in excess of the notes outstanding, but insurance thereon has expired and the receiver is without funds to renew it. Holders are asked to deposit their notes with the Mercantile Trust Company.

GRAND TRUNK.—The Hon. J. D. Reid, minister of railways of Canada, recently made public at Ottawa, Ont., a schedule of the total liabilities which the Dominion government assumes by taking over the Grand Trunk. These consist of:

(1) The debenture stock in perpetuity, amounting to a total of $155,373,806.

(2) Second mortgage equipment bonds, 6 per cent, $1,814,780.

(3) Northern third mortgage, 6 per cent bonds, $70,566.

(4) Canada Atlantic, 4 per cent bonds, $16,000,092.

(5) Wellington, Grey & Bruce bonds, $295,893.

(6) Matured bonds unpaid, $3,407, or a total of $18,184,738.

In addition, Canada will assume liability for the interest at 4 per cent on the guaranteed stock of £12,500,000 in perpetuity, with the exception that the government will have the right at he end of 30 years to take over that stock, instead of paying the 4 per cent interest that has been guaranteed on it so long as the government leaves it in its present position, in the meantime the stock being divested of its voting privileges. Also included are the following stocks: First preference 5 per cent stock, $16,644,000; second preference 5 per cent stock, $12,312,666; third preference 4 per cent stock, $34,884,535, or a total of $63,841,201.

NEW YORK, NEW HAVEN & HARTFORD.—Judge Learned Hand, in the Federal District Court at New York, granted a motion asking that the $150,000,000 restitution suit brought by Edwin Adams and other stockholders of this company against William Rockefeller and other officers and directors of the New Haven be restored to the court for trial. In the same proceeding Harold Norris and another group of stockholders asked the court to appoint a limited receiver to press the trial of the Adams suit which has been pending for more than a year. This motion is scheduled to be heard by Judge Julian T. Mack on December 11.

WABASH.—An opinion handed down in the United States Circuit Court of Appeals at St. Louis on November 24 holds that the Equitable Trust Company of New York is entitled to collect approximately $51,000,000 from the Wabash Railway Company. This opinion affirms the judgment given by Judge Adams, following the foreclosure of the old Wabash Railroad in 1915.

WILLIAM L. CARLISLE, the notorious train robber, escaped recently from the state prison at Rawlins, Wyo., where he was serving a life sentence for the robbery of three Union Pacific trains in 1916; and within a few days he stopped westbound Union Pacific passenger train No. 19 between Medicine Bow, Wyo., and Rock River, about 100 miles west of Cheyenne, and took some $250 from passengers. He got away safely, and during the next few days telegrams signed "Carlisle" and referring humorously to the efforts of police to find him were received by railroad officers and others; but he was at last captured, seriously wounded, near Glendo, Wyo., on December 2, after a long chase through snow covered mountains.

Railway Officers

Railroad Administration

Regional

E. L. Brown, federal manager of the Denver & Rio Grande, has been appointed transportation assistant to the regional director of the Southwestern region, with headquarters at Dallas, Tex., a newly created position.

Federal and General Managers

Benjamin B. Greer, assistant regional director of the Central Western region, whose appointment as federal manager of the Chicago, Milwaukee & St. Paul, the Ontonagon and the Escanaba & Lake Superior, was announced in the Emergency Bulletin of the *Railway Age* of November 11, was born at Chicago on August 6, 1877. He began his business career with the Pullman Company in the summer of 1899 and a few months later entered the service of the Great Northern at St. Paul, Minn., as a clerk in the accounting department, after which he was successively material clerk in the superintendent's office, extra gang foreman, assistant roadmaster, chief clerk to the division superintendent and assistant superintendent, with headquarters at Minneapolis, Minn. On December 15, 1908, he left the Great Northern to become transportation inspector on the Chicago, Burlington & Quincy, with office at Chicago. In 1910 he was promoted to superintendent of the St. Louis terminal. In May, 1911, he became superintendent of the Hannibal division and in January, 1912, was transferred to the St. Joseph division. He was promoted to assistant to the general manager of the Lines East of the Missouri river, with headquarters at Chicago, in 1913, and in 1914 became assistant general manager of the Lines East. From 1915 until July, 1916, he was assistant general manager of the Lines West and on the latter date became assistant to the vice-president in charge of operation, which position he held until September, 1917, when he was elected vice-president and general manager of the Colorado & Southern. In November, 1917, he was also elected president of the Colorado Springs & Cripple Creek, with office at Denver, Colo. These positions he resigned later in that year to become assistant regional director of the Central Western region.

B. B. Greer

Traffic

C. H. Stinson, assistant traffic manager of the Wabash, with headquarters at St. Louis, Mo., has assumed the duties of traffic manager, succeeding **W. C. Maxwell,** who has resigned to become connected with the Wabash Railway Company.

J. H. Wingfield, whose appointment as manager of dining cars of the Southern Railway, Lines East was announced in *Railway Age* of Sept. 19 (page 602), was born in Richmond, Va., June 6, 1871, and educated in the public schools of that city. He entered railroad service in October, 1886, in the office of the purchasing agent of the Richmond & Danville, now part of Southern, at Manchester, Va.; was trans-

ferred to the auditing department in March, 1889, and to the passenger department in May, 1896. Three years later Mr. Wingfield entered dining car service and in August, 1910, was appointed superintendent of dining cars of the Mobile & Ohio. In July, 1913, he was promoted to superintendent of dining cars of the Southern Railway and Sept. 15 last became manager as mentioned above.

Walter A. Rambach, whose appointment as freight traffic manager of the Missouri Pacific, with office at St. Louis, Mo., was announced in the Emergency Bulletin of October 13, was born in St. Louis on August 10, 1878. He began railroad work in 1895 with the Missouri Pacific and the St. Louis Iron Mountain & Southern as a clerk. From 1895 to 1908 he was successively chief clerk in the office of the assistant general freight agent and chief clerk in the office of the freight traffic manager at St. Louis. In September, 1908, he was appointed assistant general freight agent at St. Louis, and in January, 1914, was appointed assistant to the vice-president. He was promoted to assistant freight traffic manager with office at St. Louis in 1915, which position he held until his recent promotion. Mr. Rambach succeeds **C. E. Perkins,** who resigned to become general freight traffic manager of the Missouri Pacific Railroad Company.

C. E. Perkins, whose appointment as general traffic manager of the Missouri Pacific with office at St. Louis, Mo., was announced in the *Railway Age Emergency Bulletin* of October 13, was born in Chicago in 1871. He received his education in the public schools of Kansas City, Mo., the Williston Seminary, East Hampton, Mass., and Amherst College. He entered railroad service as a clerk in the office of the Kansas City, Fort Scott & Memphis in 1891. In 1896, he was appointed chief clerk to the general agent of the St. Louis-San Francisco with office at Kansas City. In 1897, he entered the service of the Kansas City, Pittsburg & Gulf, now the Kansas City Southern, as chief tariff clerk, later becoming successively chief clerk and assistant general freight agent, with office at Texarkana, Tex. In 1909, he was appointed assistant general freight agent of the St. Louis, Iron Mountain & Southern, with office at St. Louis, and in 1910, he was promoted to general freight agent. In 1913, he was appointed assistant general traffic manager of the Missouri Pacific-Iron Mountain System and in the same year was promoted to freight traffic manager, which position he held until his recent appointment on the Missouri Pacific, where he succeeds H. M. Adams, recently elected vice-president of the Union Pacific.

Engineering and Rolling Stock

W. W. James has been appointed assistant valuation engineer of the Central of New Jersey and the New York & Long Branch.

H. L. Laning has been appointed assistant valuation engineer of the Philadelphia & Reading, the Atlantic City, and the Port Reading.

E. Y. Allen, assistant valuation engineer of the Philadelphia & Reading and the Central of New Jersey, with headquarters at Philadelphia, Pa., has been appointed valuation engineer of those roads and of the New York & Long Island Branch, the Atlantic City, the Port Reading, the Baltimore & Ohio New York Terminals, the Baltimore & New York, the Staten Island Rapid Transit and the Staten Island.

M. Lipman, supervisor of the Pennsylvania, Eastern Lines, at East Liberty, Pa., has been appointed division engineer of the West Jersey & Seashore division; **C. L. P. Russel,** supervisor at Verona, Pa., has succeeded Mr. Lipman, and **J. R. Scarlett,** main line assistant supervisor at Baltimore, Md., has been appointed Mr. Russel's successor. **R. Woodcock,** assistant supervisor at Youngwood, has been transferred to Baltimore, Md., and **H. P. Heil,** transit man of the Philadelphia Terminal division, has been appointed Mr. Woodcock's successor.

Purchasing

J. M. Mitchell, storekeeper of the Virginian at Roanoke, Va., has been transferred to Victoria, Va., succeeding **K. A. Fernstrom,** assigned to other duties; **J. V. Bland,** storekeeper at Sewalls Point, Va., has been appointed Mr. Mitchell's successor. **G. C. Donovan,** has been appointed acting storekeeper succeeding Mr. Bland.

Corporate

Executive, Financial, Legal and Accounting

Ralph Budd, whose appointment as president of the Great Northern with office at St. Paul, Minn., was announced in the *Emergency Bulletin of the Railway Age* of October 20, was born at Waterloo, Iowa, on August 20, 1877. He graduated from Highland Park College of Engineering at Des Moines, Iowa, in 1899, and began railroad work in the same year in the engineering office of the Chicago Great Western. Until 1902 he was successively draftsman, levelman, instrument man and assistant engineer, and from 1902 until 1905 he was successively roadmaster, general superintendent of construction on the St. Louis division and division engineer of that division. From 1902 until 1906 he was division engineer on the same road with headquarters at Chicago. The following year he became chief engineer of the Panama railroad with headquarters at Colon, Panama. In 1909 he resigned to become chief engineer of the Oregon Trunk, with headquarters at Portland, Ore., having charge of the construction of that line into Central Oregon. From 1910 to May, 1914, he was also chief engineer of the Spokane, Portland & Seattle, and from 1911 to January, 1913, also chief engineer of the Spokane & Inland Empire and the Spokane Traction Co. Mr. Budd was appointed assistant to the president of the Great Northern in January, 1913, and in February of the same year was appointed chief engineer. In May, 1914, he again became assistant to the president which position he retained until February, 1918, when he was elected executive vice-president. He served as assistant to the regional director of Western railroads in charge of capital expenditures with office in Chicago in April, 1918, returning to his former duties late in that year.

Charles Donnelly, whose election as executive vice-president of the Northern Pacific Railway Company was announced in the Emergency Bulletin of October 13, was born at Grand Rapids, Wis., on November 9, 1869. He received a high school education in that city and later entered the Georgetown University Law School at Washington, D. C., graduating in 1896. He began railroad work on September 8, 1903, with the Northern Pacific as assistant division counsel on the Montana division, with headquarters at Helena, Mont. In January, 1908, he was appointed assistant general counsel, with headquarters at St. Paul, Minn. In May, 1918, he was appointed general solicitor of the Northern Pacific under federal control and on October 1, 1919, was elected to his present position, with office at St. Paul, Minn. Mr. Donnelly, in addition to his duties as executive vice-president, will temporarily take over part of the duties of Thomas Cooper, vice-president and land commissioner, who has been given a leave of absence because of ill health.

C. Donnelly

Alexander C. Brown, president of the Brown Hoisting Machinery Company, Cleveland, Ohio, has been elected president of the northeastern Ohio division of the National Safety Council.

EDITORIAL

Railway Age

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Uncertainty Destroys Market For Securities

In November, 72 large corporations and some smaller corporations sold $294,845,000 worth of securities to raise new capital or for refunding purposes, and not one of these corporations was a railroad corporation. In the first eleven months of 1919, railroads sold $250,919,000 worth of securities, according to the compilation which is made by Dow Jones & Company (Wall Street Journal). This is less than a tenth of the total corporation financing done in the eleven months of 1919, and furthermore, not a dollar of it represents further partnership participation in the railroad business. There were $118,331,000 of railroad bonds sold, and $132,588,000 of railroad notes, but not a share of stock. The fact that no railroad securities of any kind were sold in November reflects one thing — uncertainty. Uncertainty is more deadly to credit than worry to the proverbial cat. The law of supply and demand is set aside by uncertainty. The fact that industrial corporations sold nearly two billions of dollars of securities in the eleven months of 1919, shows the broad market which has been developed for investment securities. A study of the maturing obligations and immediate capital needs of the railroad corporations, shows how large is the supply of railroad securities which should be marketed. Uncertainty prevents the joining of issue between the supply and demand. Of more far-reaching importance, however, than this temporary present uncertainty is the fact that no railroad stock has been sold this year. An industry in which nobody wants to become a partner, is in an unhappy situation.

The Safety Movement and Past Experience

The recent accident prevention drive furnishes additional evidence of the tendency on the part of the railroads during recent years to improve the working conditions of their employees, and it is to be hoped that the termination of the drive on October 31 has not marked the end of concerted efforts to reduce the number of accidents. There would seem to be no good reason why an active safety campaign should not be maintained continuously, if it is not overdone. But in carrying out these activities one should profit from experience gained in the past with movements of somewhat similar character and avoid the old pitfalls. It is easy to recall the enthusiasm which attended the so-called "Welfare" movement and easier to recall how it was killed by its friends in allowing the idealistic phase of the problem to obscure the practical side. That there is danger of defeating the purpose, or at least of lessening the efficiency of the "Safety" movement in a similar manner is evidenced by the fact that it is not difficult to find division officers who, because of the local conditions under which they work, are forced to devote as much as one week in each month to safety matters and meetings. Granting the great importance of the movement it is hard to conceive of any division officer being willing to give a week of his time continuously to these matters. That his interest will eventually be lost seems certain. The fact that such conditions exist is due, probably, to the fact that it is common practice for the roads to employ specialists from outside to head the safety committees. Naturally their first interest is in actual results and, as naturally the viewpoint of others is lost sight of. It seems that the employment of men experienced in actual railroad work and thoroughly awake to comparative values would go a long way to relieve the situation.

Handling Labor Controversies

That there is a feeling of unrest among all classes of railroad labor despite the large wage increases the majority of workers have received, is generally admitted. The boards created by the Railroad Administration to pass on labor disputes have performed an important function during the period of federal control by providing a channel for the orderly settlement of the disputes arising due to this general air of dissatisfaction. Each successive bulletin dealing with labor matters brought up innumerable controversies, a large share of which were finally passed on by the board of adjustment. Important agreements governing the working conditions in the mechanical and maintenance of way departments have recently gone into effect. The labor organizations are now strongly intrenched on all the large roads and they will undoubtedly try to place their own interpretation on these agreements. As the Division of Labor will go out of existence at the end of federal control, the managers will have a serious labor problem to face during the first few months of private operation. It is essential that during this period of readjustment railroad officers should be free to devote their attention to the problem of operating the properties in the most efficient manner. In the past too much of the time of the higher executives has been spent in long drawn out disputes, over petty questions concerning wage matters. The climax has been reached during federal control. After one of the wage supplements was issued the superintendent motive power of a certain large road spent three weeks in conferences with representatives of the shop crafts, yet only one-fourth of the questions brought up were disposed of, the remainder being referred to the adjustment board. Such procedure is an unjustifiable waste of time, of which the executives should be relieved. With the extremely complex wage agreements now in force it might be well to have an officer in each department, reporting directly to the department head, who would be the final authority on the interpretation of wage contracts. The representatives of the labor organizations have little to attend to aside from these disputes and if their demands are refused, seldom fail to take their case to the highest tribunal. It goes without saying that the higher officers must keep in close touch with the general labor situation, but it is quite unnecessary that they should be called on to settle trifling differences with regard to the meaning of the various provisions of the contracts. Some such plan as suggested above should prove helpful by taking this burden off the shoulders of the executives.